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MEEHANS' MONTHLY.

A Magazine of Horticulture, Botany
and kindred subjects.

CONDUCTED BY

THOMAS MEEHAN,

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Volume VIII.
1898.

ILLUSTRATED WITH COLORED LITHOGRAPHS,

BY

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THOMAS MEEHAN & SONS,

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Preface to Volume VIII.

IN A WORK of the character of MEEHANS' MONTHLY, the volumes are numbered, as if part of a continuous series. The idea is followed here, and this one regarded as the 8th of the issue. But the aim is to make each volume complete in itself,—just as if it were a separate and independent book. At the same time it is a pleasure to know that those who secure one volume are pleased to secure the past and the future issues, as far as they can.

It is one of the pleasures connected with the publication of the work that it is so heartily appreciated everywhere. That it may long live, has been the hearty expression of multitudes of friends,—and the conductors believe that the present volume will be no less valued than the others that have gone before.

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LILIUM SUPERBUM.

LILIUM SUPERBUM, L.—Sectional character:—flowers nodding; leaves of the perianth recurved, sessile. Specific character:—Stem commonly many-flowered; leaves smooth, lanceolate, three-nerved. The lower ones whorled, the upper scattered; leaves of the perianth revolute, rather obtuse, orange spotted with purple. (Chapman's *Flora of the Southern United States*. See also Gray's *Manual of the Botany of the Northern United States*, and Wood's *Class Book of Botany*.)

The main description of this lily has been taken from Chapman for the reason that, though it reaches its geographical limit in the upper district of the territory covered by that author, in the form known as "variety *Carolinianum*," it is found much further south. This form grows only half as tall as the typical form, has the leaves scattered instead of mostly verticillate (see fig. 1), and these leaves nerved in contradistinction to the strongly three-nerved character of the main species. Then there are seldom more than three flowers on one plant, though in vigorous specimens of the type there may be a dozen, or even more; while the leaves of the perianth—as the three sepals and three petals are called—are more acute, and less recurved. The earlier botanists regarded the two as quite distinct enough to warrant separate names as separate species,—then came a class that united them, and the names are given as synonymous in many botanical dictionaries. But this brought a new difficulty that, on the same principle of uniting for want of a nicely drawn and clearly marked line, all the species of lily on the Atlantic portion of our continent would have to be resolved into two,—those with upright, clawed petals, represented chiefly by *Lilium Philadelphicum*, and those to which the one here illustrated belongs.

Botany, as a science, is the invention of man, to help him in the study of vegetation. It is found more helpful to retain the sections as species with their distinctive names, and hence the modern tendency is to return to the views held by the early fathers of the science. The variations, however, taken by themselves, afford a very interesting study. In a locality where plants are particularly abundant, scarcely any two plants will be found exactly alike. Leaves and flowers both vary. They seldom, however, over-run the line marking other species, though sometimes they seem to do so. The famous historian, Francis Parkman, was a keen observer and enthusiastic lover of nature. In a letter to the author, dated 19th of December, 1877, he remarks:—"I am glad you find matter deserving attention in my lily experiments. Some of them were carried on under glass, and some of them in the open air, so that I think the general results will be confirmed by future trials, though I am quite of your mind as to the subtile influences of 'environment.' I have observed very great variations in raising seedlings of *Lilium superbum* (*without* hybridization.) The differences of size and color are often very striking; but, according to my experience, *L. Thunbergianum* sports still more. Do not *L. superbum* and *L. Canadense* run together by insensible gradations? I think I have seen evidence that they do." The tendency of modern botanical thought is, however, to regard forms, or, one might say, species, as having been evolved from some pre-existing species, either still continued or that has passed away into the fossil age. If there be marked distinctions between the centres of these circles, the fact that the outlines over-lap does not militate against the centres of these circles receiving distinctive names as separate species. Many of the marked variations of this lily have received distinctive florists' names in Europe; but this has not been attempted here.

Of late, some attention has been given to the bulbs of lilies as affording good distinctive characters. A bulb is neither more nor less than a metamorphosed branch, the scales being arrested and thickened leaves. In some species, a new bulb forms close to the old one,—in others they send scaly branches horizontally before making the final bulb for the next year. In this species, the flower stem usually pushes out horizontally from the old bulb before assuming the final erect position, and two scaly branches to form the bulbs for next

year push out, one on either side of the flower stem, forming two bulbs before the end of the season for the coming year. Many careful comparative observations on the forms and manner of growth in the several species have not, however, been placed on record,—and whether exact specific lines can be drawn from the root system to better advantage than from the leaves and floral parts, requires further examination.

The earliest common name seems to have been "Swamp Lily," but, as *Lilium Canadense* is as ardent a swamp-lover, the name has not been followed by authors. Various English names have been proposed, but none have become common. We read of "Great Swamp Lily," "Superb Swamp Lily," "American Swamp Lily," "American Turk's-cap Lily," "American Martagon Lily,"—but the names are rarely repeated except by the authors who invented them.

Of lily, itself, an old writer says: "When the Prophane Authors, in the Descriptions they make of their *Festivals*, or of the *Presents* were given in token of Affection and Esteem, would use the Name of any Flower, they generally made choice of that of the *Lilly*, which signifies in the *Greek*, a flower every way lively and charming."

The Martagon Lilies, with which the earlier botanists classed *Lilium superbum*, were known in still earlier times as "the Whorled-leaved Lilies." In the northern portions of the Old World, the species of this class are abundant, and have had their share in furnishing the numerous references with which the poetry of the Old World abounds. Ancient history would be tame without allusions to the lily and the rose. The two are frequently associated. A polite French author, Boisjolin, remarks of the lily, "Il est le roi des fleurs dont la Rose est la reine." The ancient poetry and legendary love of the lily, however, refers mainly to the White Lily, *L. candidum*. This, in the oriental fancy, was the original lily. The golden ones were subsequent creations. The White Lily, they prettily planned to have sprung from the milk of Juno, spilled on the ground through the greediness of Hercules, who hoped to achieve immortality by taking the chance of imbibing the heavenly fluid from the sound-sleeping Goddess. This is the lily which Louisa Twamley, a poetess fond of floral illustrations, refers to in the lines:

> "Bring Lilies for a maiden's grave,—
> Roses to deck the bride."

and, in fact, it is the White Lily that in almost every instance is the one referred to, when no especial kind is named. American poets have not done much for our own native species. Percival, however, evidently has it in mind in the following:—

> "Flower of a southern garden newly blowing,
> Fair as a lily bending on its stem,
> Whose curled and yellow locks, in ringlets flowing,
> Need not the lustre of a diadem."

The bending of this lily and of the Canadian may be worth referring to, in view of the fact that there are associated species which never bend. The remarkable point is that, after the flowering is over, if the flower has been fertilized, the growing seed-vessel takes an upward turn and assumes an erect position. (Fig. 4.) This would intimate that the upright forms had been produced by nature by the production of an additional rhythm of growth, before the unfolding of the flower. In *Lilium superbum*, nature, it may be said, has made more haste to unfold the blossom than in the making of the class to which *Lilium Philadelphicum* belongs. The unfolding, which is characteristic of second growth in *L. superbum*, is all finished in *L. Philadelphicum* before the unfolding of the blossom begins. It has been found, in recent years, that growth in plants is not a regular, continuous operation, but is of a rhythmic character, and that the number and intensity of the rhythms have much to do with deciding the characters which distinguish one species or variety of plant from another. There are few better illustrations of this principle than that afforded by these two classes of lilies.

Prof. Conway McMillan notes that it is in Canada, throughout the province of West Ontario, and in the Atlantic portion of the United States, from New England to New Jersey and Georgia, from thence proceeding westwardly to Minnesota, Missouri and Arkansas. It seems to be found in the greatest abundance in open meadows and low ground; but the finest specimens are found in rich, bushy places.

EXPLANATION OF THE PLATE.—1. Upper portion of a flower stalk, from a plant near Philadelphia. 2. Section showing outline and veined leaves, forming a verticial. 3. Opening flower, showing its pendent condition. 4. Maturing seed-vessel which has become erect.

WILD FLOWERS AND NATURE.

NANSEN,—DRIFTING WITH NATURE.

To drift with thee, not strive against thy tide,
All-powerful Nature! to pursue thy law,
Attentive,—with devout and childlike awe
Heark'ning unto thy voice, and none beside:
To drift with thee! With thee for friend and guide,
In fragile bark, careless of cold or thaw,
To brave the ice-pack and the dread sea-maw!—
So are man's conquests won, so glorified.
The truest compass is the seeing soul.
Oh, wond'ring Earth! did not thy spirit glow,
Calling to mind the deathless Genoese,
As Nansen, pilot of the frozen Pole,
Like a young Viking rode the icy floe,
Wresting their secret from the Arctic Seas?

—FLORENCE EARLE COATES, in *Harper's Magazine*, November, 1897.

NOTES ON THE NOVEMBER NUMBER OF MEEHANS' MONTHLY. — From beginning to end, I find so many suggestive articles in this number it is almost impossible to pass them by unnoticed.

Dryden's translation of a passage in Virgil carries me back to my long-gone school days, when our teacher, the Rev. B. C. C. Parker, (later Chaplain of the Seaman's Chapel), used to call up our class sometimes by saying "Come Mr. Virgil."

The nest sent you by Mrs. Shepherd recalls a beautiful maple tree in dear old Vermont that sheltered a fine large nest of a Baltimore Oriole with its little family—a lovely family that was not permitted to arrive at maturity, since 'tis just as true as when first penned: that

"Satan finds some mischief still,
For idle hands to do."

My husband had a distant relative for a guest, who took a fancy to the birdlings and thought he would like to raise them for cage birds to take home to his sister. And he safely climbed the maple tree that ought to have shaken him down, and brought away the beautiful young things from their leafy home and mother's prudent care. He was well rewarded for his depredations upon the birds' domain for one and all refused to accept his care, and he picked wild strawberries for them in vain.

As it has been said of the North American Indian that he will not be a slave or live in captivity, so these true lovers of freedom refused to be comforted, and the young man returned home with an empty cage.

THE SAVIN AS AN ORNAMENTAL EVERGREEN.—Just the name of this shrub recalls a New England incident, when, on a winter's day, a Savin branch was placed outside one of our windows, and I gazed upon it delightedly. Yet the fullness of its capacity for beauty was still to be enjoyed. The snow-flakes fell and lodged among its blue-black clusters of berries and among the thick branches in a way to suggest birds' nests, pop-corn balls, or the Guelder Rose, popularly called Snow-ball. But this was but a preface to its charm. When the morning sun shone warmly over the shrub, the snow flowers began to disappear and weep themselves away in a gentle, glittering cataract. But the climax was yet to come—like the prince for the glass-slippered Cinderella. At night, Jack Frost in silence came, but made his presence manifest by turning the drops that formed the little cataract into solid gems and sparkling diamonds, and morning showed a glowing night. Those bright jewels we, in New England, called icicles. I've not seen many on the Pacific Coast. The Savin being considered poison is probably one reason that excludes the beautiful shrub from much culture as an ornament.

EUPATORIUM AGERATOIDES. — It is stated that a vase of these flowers will last fully ten days. Now we have, here, all about the streets (or did have before extensive grading was done), a lovely little pink flower, *Erythræa*, which will keep on growing and blooming in a vase, *without water*, for more than ten days. It is often called Canchalagua, and goes to sleep at night, waking refreshed at day-break to charm us another day. We often gathered these dainty flowers and enjoyed their constant smiles.

Some object to flower vases on the table near books, lest, by some advertence, water should be spilled and soil some choice volume.

But with a vase of *Erythræa*, there is no danger and no fear.

DESTROYING SCALE.—This is an article that ought to have a bell attached to command attention, and is worthy of letters of gold. Many so like to try useless experiments and neglect the tried and proved.

COOKING POTATOES. — At one time, wire baskets were in great favor; and potatoes could, with their use, be all lifted from the boiling water at once and be placed in the oven or some place where the steam would escape and they still remain hot.

THE NEW YORK BOTANICAL GARDEN.—It is good to see the familiar name of Prof. N. L. Britton at the head of this new garden of two hundred and fifty acres.

CHAS. LINNÉ.—Ever since having read the sketch of the life of Charles von Linnæus, in Mrs. Lincoln's Botany, a charm has hovered around the noble name, and a glance at his pictured face has been a delight. It has been said that he was sick unto death when Dahl returned from the New World with the dahlia and other novelties, but he rallied at sight of the new wonders and took a new lease of life.

EDELWEISS MANUFACTURE.—I have, in my herbarium, an Edelweiss of nature's own manufacture, from Switzerland.

MEDICINAL PLANTS.—An important matter, may it be a success. MRS. E. E. ORCUTT.

San Diego, Cal.

INFLUENCE OF LIGHT AND HUMIDITY ON THE ODORS OF FLOWERS.—The French botanist, Mesnard, has published, in the *Revue Générale de Botanique*, a critical study on the influence of light and moisture on the discharge of odors of flowers.

In order to make these researches, the author used a thread dipped in turpentine; the degree of intensity of odors could be measured after more or less time necessary to expose this thread, in order that the smell of the turpentine should neutralize the odor for analysis.

The experiment was first made on known essences,—rose, musk, etc., then on flowers, cut or otherwise, as Lilies-of-the-Valley, carnations, roses, etc. The results of the experiments were noted after each one, and light was found to be either favorable or unfavorable in the production of the odor of flowers. Thus, the odor of carnations was greater in the light than in the shade; but it was the contrary with the Lilies-of-the-Valley. This probably proves that carnations grow well in the sunlight, if well supplied with dry and good air; while the lilies grow naturally in the shade and moist air, and are not able to endure the action of the sun's rays on their delicate corollas.

It is to be remarked, however, that the unfavorable influence of the light may be compensated for by the dampness of the compost; the plants in our beds diffuse less odor relatively when dry than after being watered.

A curious fact is that when the flowers are touched the perfume is diffused.

Mesnard draws different results from his experiences. He concludes that the southern coasts of the Mediterranean are unfavorable for the production of floral odors because the action of the light there is very strong without being counteracted by moisture, although the province as a whole is a country blessed with sweet-smelling flowers, because there is so much moisture.

Translated by SARAH D. LANNING.

From *La Semaine Horticole.*

THE WITCH HAZEL.—In the mountains of New England I found, early in September of last year, a bunch of Witch Hazel in full bloom, with the stalks still clad in abundant summer leaves. I was deluded into thinking for a moment that it might be a new species, since it bloomed so early; and, moreover, certain folliculor capsules on the branches, which I took for the pods, were quite different from the ones produced in Pennsylvania. They were green and somewhat puberulent, and covered with small spines or beaks, the whole having somewhat the shape of the "bag-worm" cocoons which are so abundant on our cedar and willow trees. A closer inspection forced upon me the disappointing discovery that all these follicles were pathological,—were nothing but hollow green excrescences, each containing one or more minute larvæ of some insect to me unknown. It was the only plant of *Hamamelis* I found in the mountains, and having seen no normal ones, I cannot say whether or no the species blooms naturally this early, or whether this particular shrub was forced by the disease which the insects had inflicted upon it.

NEWLIN WILLIAMS.

How Nature Makes Flowers.—Every part of a plant is made up of myriads of distinct individuals which we call cells. Within each of these individuals, the whole future plan lies hidden. The most powerful microscope has failed to reveal to us the hidden mystery. No microscope ever will. We take one small cell and examine it with a powerful glass, and note its character. We take another, and it appears essentially the same. But, finally, one cell develops an oak tree,—and the other a buttercup or a rose!

But we may learn something by taking the ultimate production, and looking backwards. The united cells, at first, make very simple organism. With greater union, they make membrane. Uniting with more energy, the membranes twist and make stems, as in mosses—and so it goes. Everything is made from modified membrane or leaves. As we proceed, we find that flowers, even, are but leaves modified in various ways, until frequently a single flower has within its folds numerous other flowers, but so much combined into stem structure as to be completely hidden from human view. Occasionally, with a little more energy in the form of what we call life, nature lets us see that she has these hidden secrets in reserve. A compound flower, such as a daisy or sunflower, is really a collection of numerous florets that might have been branches with their own leaves and flowers. We are accustomed to say these florets are suppressed branches. We should, more correctly, term them undeveloped ones. A compound flower is not a retrogression, but an advance.

Herewith, we give an illustration of what we are teaching now. It is a flower of the garden marigold, in which every ray floret has advanced to stem, bracts, and perfect flowers! It is a wonderful inside view of the manner in which nature constructs flowers.

EXTRA DEVELOPMENT IN A MARIGOLD FLOWER.

Ophioglossum.—The print you published of my photograph of *Ophioglossum* corresponds closely to the description of the so-called *new Ophioglossum* found at Wildwood, New Jersey, by the Brittons, and figured in the Philadelphia *Ledger* of August 16th, last. The twisting of the stem, and the two fronds springing from a single root, are quite noticeable, both in the photograph and in my herbarium specimen, though in no case have I found *two* fertile fronds springing from the same root. I looked for plants in last year's locality and could not find a single specimen this July.

E. Newlin Williams.

Migration of Plants.—During the year 1897, the botanists of New Castle County, Delaware, chiefly Tatnall and Canby, discovered 104 species of plants that had either entered their territory or had been supposed to have wholly disappeared during recent years. Plant wanderings are very interesting. The Kew Weed, *Galinzoga parviflora*, became wild there from Mexican seed. From Kew, it has been distributed freely.

GENERAL GARDENING.

THE GOLDEN APPLE.

"Here also sprang that goodly golden fruit
With which Acontius got his lover true,
Whom he had long time sought with fruitless suit;
Here eke that famous golden apple grew,
The which among the gods false Ate threw,
For which th' Idæan ladies disagreed,
Till partial Paris deem'd it Venus' due,
And had (of her) fair Helen for his meed,
That many noble Greeks and Trojans made to bleed." —SPENSER.

THE ENGLISH WALNUT.—Possibly few trees in the Old World are more profitable than the English Walnut, which thrives in England and all over the northern part of the continent of Europe. The wood is especially useful for gun-stocks, and for many articles of furniture, and is found profitable from trees of ten years of age and upwards. There is always good demand for the nuts; so that there are two distinct lines of profit,—by the timber, and by the fruit. In our country, they thrive in any portion of the Eastern States; although, as they progress northwardly, the tips of the last year's shoots are destroyed by winter. The living portions push out again, however, and generally bear as abundantly as before.

In the vicinity of Philadelphia, there are numerous trees, planted by the early German settlers, which bear every year. Single or isolated trees sometimes fail to bear fruit, on account of the pollen-bearing flower maturing and scattering pollen before the nut-bearing flower is in condition to receive it; and, for this reason, crops are more assured when a number of trees are planted together. In this way, some of the pollen-bearing catkins are conditioned so as to be in bloom before the time that the nut-bearing flowers make their appearance.

A CARNATION DISEASE.—It is only of late years that cultivators have come to understand that many plants suffer severely from the attacks of fungus parasites on their roots. When this occurs, the whole of the plant suffers. Just in what way this parasitic attack of the roots affects the whole system is not known, but it is thought that a species of fermentation occurs, which is carried by the sap to every part of the plant. The usual effect is to give a lighter green or yellowish tinge to the whole of the foliage. This is especially prominent in the disease of the peach tree, known as the yellows. In the carnation, the existence of the parasite is also made clearly manifest by the different tint of the carnation leaves. When the plants are growing in the open ground during the summer time, this difference in the tint of color, contrasting with those which have not been attacked at the roots, is very prominent. One may also have an opportunity to witness the progress of the root parasite. There may, at first, be only one or two plants with the yellowish tinge; in a few weeks scores of plants forming a circle around the central one will be seen to be affected.

The fungus spreads by little threads like cobwebs, which can readily be seen with the aid of a pocket lens. The remedy is to wet the unaffected plants with a solution of sulphate of copper. This usually prevents the further spread of the parasite.

There are, of course, other carnation diseases from fungus parasites on the leaves; but this paragraph is intended to deal only with those which affect the roots.

JUNIPERUS SABINA—THE SAVIN JUNIPER.—In the November issue, you say: "C. A. Green aptly observes: 'The common Ground Savin —would be a fine lawn plant.'"

"Aptly observes;" Oh, my!

Let him—let you—live on a New Hampshire farm one summer, where such handsome (?) rosettes ornament (?) the hillside. I think the eye would tire of their beauty. (?) And, worse yet, on a flat lawn.

By all means, do not let nurserymen get the idea that there is a peculiar beauty in *Juniperus Sabina*. JOHN A. WHEELER.

Milford, N. H.

A correspondent in another column, takes a more optimistic view of it.

POPULARITY OF DUTCH BULBS FOR WINTER FLOWERING.—It seems safe to admit that no class of plants has so wide popularity as that covering what are known as Dutch or Holland bulbs. And it is not alone the small cost at which they may be obtained that has created their popularity,—though doubtless it is one of several reasons,—but there is a certain charm about them, centering in their different character of growth and habit, and the exquisite, fragrant and various-colored flowers they produce. To some, the strength of the odor is excessive ; but to the majority, it is unexcelled. Then, too, the possibility of flowering them in vases of water varies the monotony of pots, and exposes to view the usual secrecy of root-growth—a delightful observation. This recalls to the mind of the writer a time when he produced, as a source of interest to the members of the household, a common Sweet Potato, grown in water as the bulbs above-mentioned, and placed on a mantel, where the hair-like roots could be seen from the time they appeared in sight until they fairly filled the jar, the stems trailing over the edge of the mantel quite prettily. It is a simple means of enjoyment that is worth anyone's while to secure. A fairly large potato that will rest in the mouth of the jar, allowing about one inch to be covered with water, will be suitable for the purpose.

It is perhaps not prudent to make such an important subject of growing bulbs in water, for if carried out exclusively, or even largely, it may prove a nuisance. As one of our readers has well said in substance, vases filled with water are liable to be overturned, to the ruination of more valuable things. Nevertheless, safe places can surely be found for a few of such things that are bound to give so much pleasure.

While the recital of these recollections has caused deviation from the original thought, it holds us to the subject of the root habit of bulbs, an explanation of which is practically the chief instruction necessary for the beginner. Contrary to the habit of almost all plants, these make roots during winter,—even when planted outside,—and as roots must be made before growth and flowers, they must be kept cool and in darkness, to prevent advancement until sufficiently rooted. As a dark, cool cellar or closet is to be found in almost any house, there is no difficulty in giving them the treatment required, and the due reward of bloom is a stupendous return for the little outlay of time, space and money. Is it any wonder that they are so universally cultivated—in the home of the rich and poor alike?

History tells us that this popularity extends from an ancient, uncertain period, though modern development has greatly improved the various species of that age. It has been but moderately recent that, in Europe, fabulous prices were paid for tulips ; but, thanks to the immense acreage Holland devotes particularly to bulbs, they are now placed within the reach of all.

Attempts have been made to produce them in this country, with indifferent success, though efforts in Long Island New York, and Oregon, have been encouraging. The reports from the latter State were but recently made, and are being examined with considerable expectancy.

WEEDS IN PASTURE FIELDS.—O. W. H., Mt. Air, Lawrence Co., Pa., says :—"We are troubled much in our hay and pasture fields by weeds of various kinds, which spread more from year to year. They make the farm look unsightly, spoil the hay, and require much labor to keep them subdued. Could you give us any information on how to exterminate common farm weeds ?"

This correspondent has touched on a matter that presses itself on general attention. Thousands of acres of pasture land are occupied by butter cups, daisies and other plants which cattle will not touch, and among which desirable grasses have a hard time to exist. The writer recently saw a ten-acre lot so profusely filled with butter-cups, that there was not more than an acre of grass. Only think of nine acres of absolute waste! In almost all cases the weeds could have been eradicated by employing a boy to pull them, when they first appeared here and there on the property, at the cost of but a few cents per acre.

When by this early neglect of the proverbial stitch in time the weeds have secured absolute possession of the ground, the only remedy is to plough it up, put in corn, or some crop needing the hoe and keep thoroughly clean for two years, when the pasture grasses may be again sown.

UMBRELLA CANES AND WALKING STICKS.—The London *Pall Mall Gazette* says :

An interesting article appears in the November number of *Pearson's Magazine* concerning the cultivation of the walking-stick and its preparation for the market. Ash sticks are, it seems, specially grown with a natural handle in this way. Beneath the soil of the plantation lies an immense bed of slate. The young saplings encounter this on their downward growth and, being arrested in their development, turn off in a new direction at right angles.

The public have a craze for natural sticks. The pretty markings, the quaint shapes, must not have been added in the factory. All this must be done while the trees are growing. What is known as the Congo stick has little indentations, quite close together, which give the cane its charming appearance. They are natural, and at the same time artificial. The wounds were made by a grower. They were inflicted with a sharp knife, through the green bark, and afterwards bound with a kind of a liniment for the sake of protection. To give a spiral effect, creepers are trained to grow round the young saplings. As for the twisted thistles that are so popular as sticks, they are seized bodily and twisted in a way that one might think would wrench them from their roots. They continue to grow like gigantic corkscrews.

The majority of the sticks may be said to be raised upside down. The roots are turned into handles ; the tops become the bottoms. As they increase in size, their training begins. They are twisted this way, they are bent that and tied into fantastic shapes with string. At one time there was a demand for a stick with a crooked handle, its end bound to the stem by a lovers' knot in ivory. The rings had to be slipped on while the plants were growing, and in this way was created the curious spectacle of some £500 worth of ivory hanging on the bushes, guarded day and night by a peasant armed with a thick cudgel.

It is to the cane family that the most valuable of all sticks belongs, a stick that is worth from £10 to £15 for a perfect specimen. This is the Malacca. The plant itself is as common as the willow in England, but it is seldom that one can be found with nodes or joints so far apart that one length can be made into a walking-stick. One sees, however, many Malacca canes in the hands of people who obviously could not afford to pay £10 for a walking-stick. Certainly they are carrying Malaccas, but if one knew how to detect it one would find that instead of being made from one perfect length they are in reality composed of two. The tiny protruding shoulder is shaved down and the cane painted. But it is not hard to discover when this is done. The natural enamel of a Malacca cane finishes in a peculiar ridge, which in a genuine specimen may easily be felt with the fingers from the handle to the ferrule. Where a joint has been cut away this ridge must disappear, and no effort or imitation can reproduce it below.

PEAT SOIL.—Every one knows that there are many plants which prefer to grow in peat soil, rather than in earth as we are generally accustomed to meet with it. Plants which have this preference are usually those which produce an enormous number of very fine, hair-like rootlets. It is not that there is anything peculiar in the soil itself which leads to this preference, but from the often-verified fact that rootlets need air, just as much as do leaves. It is impossible for the plant to live without some proportion of air being absorbed by the roots. A growing plant soon dies when the roots are immersed in water. It is, in fact, smothered for want of air. Roots of comparative strength can force their way through the compact soil, so as to reach the air confined in the various pores ; but the hair-like roots cannot do this. They have not the vigor necessary to force their way. Soil, therefore, which is at once moist and penetrated by atmospheric air, as peat is known to be, gives these plants an opportunity to readily make their way,—a privilege of which they would be deprived in heavier soil. So it follows that the point of the superior value of peat soil, for some plants, is a question of atmospheric air, rather than the chemical condition of the soil.

CHINESE PRIMROSES. — Some plants which were one time welcomed everywhere are now rarely seen. The demand for cut flowers makes it much more profitable for florists to have a large quantity of a few kinds of flowers rather than a great variety. It is not commercially profitable for the average florist to keep a

great variety of plants on hand. To find this old-fashion type of beauty, the Chinese Primrose, one has now to go around to the gardens and greenhouses of the amateur flower lover. Here we frequently find not only old-fashion flowers that pleased us so in our youthful days, but fine grown and magnificent specimens that would have taken premiums in the days of Auld Lang Syne. Last spring, in the window of a country farmhouse, the writer saw a plant with a dozen trusses of bloom, and with the most healthy coronal of leaves surrounded that one could well imagine.

HARDINESS OF QUERCUS AQUATICA.—There is in Germantown, Philadelphia, a good, sturdy tree of the Southern Water Oak, *Quercus aquatica*, which has now reached an acorn-bearing age, having produced a few both the present and the past season. It is a round-headed tree, about 18 feet in height and some 15 in width. The seed of this oak came from Georgia, some 20 years ago. In its early days it had somewhat of a struggle for life, having its latest growth injured more or less in winter. But, for perhaps 10 years, this injury has not occurred. I have noted like occurrences in other Southern trees. While young there will be some injury every year, but a persistent struggling on sees them at last able to resist the cold. I believe they accommodate themselves to our northern season, ripening their wood better in time than they do at first. I would mention the Sweet Gum as behaving in the same way when obtained from the South.

JOSEPH MEEHAN.

THE CAMPHOR TREE.—A paper on the Camphor tree, by Lyster H. Dewey, in circular No. 12, of the Division of Botany of the United States Department of Agriculture, gives an account of the Camphor tree, with an illustration which the Department has given permission to transfer to our pages. There is considerable public interest in this tree at the present time in connection with attempts to cultivate it in California and the Southern States,—not only for the beauty of the tree, but for the sake of the grateful resin which it produces, and which is in such universal use in our country.

It is very nearly related to our common Sassafras, which was long known as *Laurus Sassafras*, while the Camphor tree was *Laurus Camphora*. In the modern making up of plant names, the Camphor finds itself with the Cinnamons, as *Cinnamomum Camphora*,—while the Sassafras becomes the type of a distinct genus, *Sassafras officinale*. The pretty purple berries of the Sassafras are familiar to most readers. It will be noted that the fruit of the Camphor tree has considerable resemblance to it. In common with most broad-leaved evergreens, it suffers from a dry atmosphere in winter more than from low temperature. In China and Japan, it grows in a wild state on

FIG. 1.—Camphor tree: *a*, young leafy shoot, scale one-third; *b*, flower cluster, life size; *c*, fruit, life size.

mountain sides, where condensation, from the clouds, furnishes the moist atmosphere in which it delights. In our country, it would probably not thrive where the temperature falls much below the freezing point.

It is not probable that the Camphor tree will ever be planted for profit in the United States, as the resin has to be extracted from old trees only, and these have to be destroyed in order to get at the desired article. About 30 years of age, is the youngest sacrificed, while many believe it is not profitable to cut them till 60 or 70. It is too slow a business for America.

THE BLACKBERRY AS AN ORNAMENTAL SHRUB.—Here it is the first of November. The frosts have made sad havoc with the foliage of most of the vines and shrubs. The beautiful roses and the bright autumnal tints are now but dreams of the past.

We would fain prolong the season as long as possible, and, upon looking about in the garden, I am delighted to find that the blackberry vines are still bright and beautiful—the rich colors send a thrill of pleasure through me, and the thought of utilizing the blackberry as an ornamental vine is suggested. They might be planted near the fence, about the trellis usually covered with the wild cucumber vine, or wherever a blackberry plant would fit in harmoniously, in the lawn to the rear of the house.

The plant is not unsightly during the entire season ; it makes its appearance early, the bloom is beautiful, and the berries are delicious as well as ornamental, while it has the added virtue that the foliage is still bright and beautiful when most other plants have succumbed to the early frosts. The blackberry has thorns —but so has the rose, and we will not give up the wild rose, the Sweetbrier, etc., be they never so thorny. MRS. W. A. K.

Columbus, O.

FERTILIZING ORCHIDS BY INSECTS.—We said recently, in response to a question from a subscriber, that orchids in greenhouses, are sometimes made fruitful by bees, or other winged insects.

By a singular coincidence, the *Orchid Review* gives a full account of observations upon this question made by M. Griessen, of Kew.

M. Griessen caught an humble-bee with pollen from three different kinds on its body. Between the eyes, it had two kinds of pollen from *Odontoglossum*, four kinds from *Cattleya* on its body, and, between its wings, pollen from the *Vanda*, which proves that the humble-bee secures its booty from divers orchids. Another insect, a common bottle-fly, had its apparel pollenized from the *Cirrhopetalum*.

It is evident that fecundation has as many opportunities, in a closed greenhouse of plants of the same genera in great numbers, as out-of-doors.

Translated by SARAH D. LANNING.
From *La Semaine Horticole*.

THE HAT-THROWER FUNGUS.—A very remarkable little fungus is the Hat-Thrower, *Pilobolus crystallinus*. Spores germinate in old manure, and seem to be especially favored by cow manure. When the spore germinates the case explodes, and the upper covering, just like a small black hat or cap, is thrown upwards to a long distance. Some rose growers have entered their houses of a morning to find all the bloom completely covered with little black dots like pepper, which are the hats that have been thrown up over night by this fungus. Of course the flowers are unsalable. It is only in this way that this fungus is troublesome ; but that is bad enough. The cultivator in these days should not be without a small lens in his pocket, and he should be very alert to use it. With this habit, he would soon be able to detect the first appearance of this fungus on the earth beneath the plants, and an application of a solution of copper would at once destroy the little pest and prevent all future trouble. Even without the lens, he may not suffer severely if he applies a solution when a few of the little dots are discovered.

NEW OR RARE PLANTS.

ACIDANTHERA BICOLOR. — The note on *Acidanthera bicolor* in the November issue of MEEHANS' MONTHLY was probably made from observation of some crushed flowers, and did this plant some injustice. I enclose photograph of a flowering spike which conveys a true idea of the flowers and buds, about half natural size. The corms grow with same treatment as the gladiolus. The plant does not seem to seed here, but increases very rapidly from bulblets, which are found in great numbers during the growing season. The flowers are certainly very fragrant, with an odor of the Datura class. (See cut page 11.) J. N. GERARD.

Elizabeth, N. J.

THE HARDY FLOWER GARDEN.

ALPINE PLANTS AND THEIR CULTIVATION AT LOW LEVELS.—By the name Alpine region, as applied to mountains, is usually understood, the zone between the extreme limit of the growth of the arborescent species of plants and the line of eternal snow. The aspect of all vegetation of this region is peculiar. What

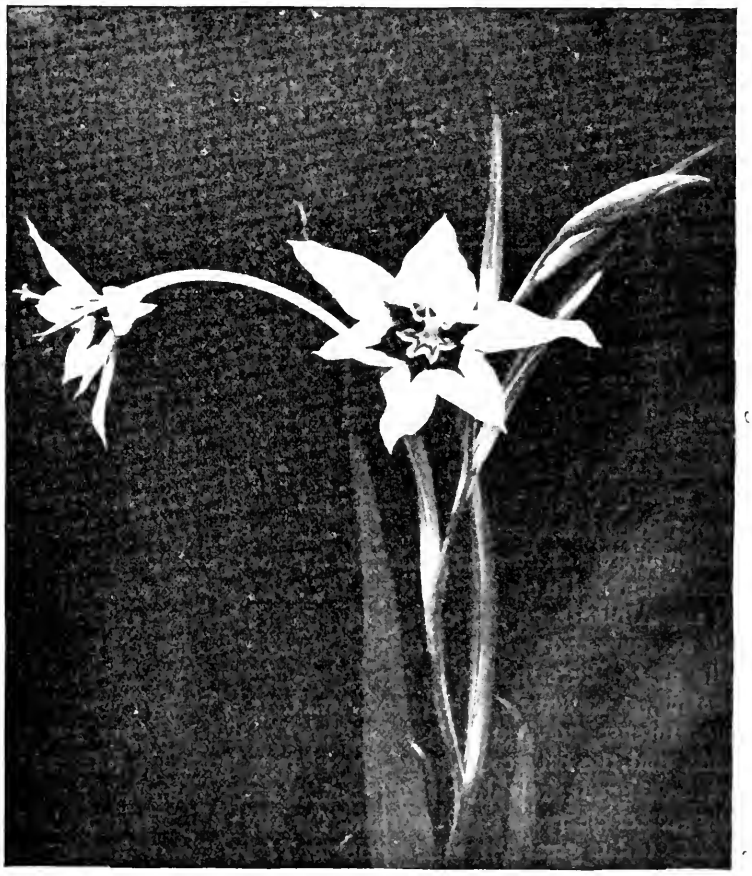
strikes one first is, the closeness of the plant stems to the surface of the earth and their dwarfness. The leaves are always seen near to the base of the central stem and are frequently in the form of rosettes or tufts, surrounding it ; their color is usually an intense green, sometimes a grayish or glaucous green ; and the flowers have especially strong and brilliant tints and shades of color, much more intense than the plants of the same species growing on the lowerlands. These dwarfed plants, especially those of very great altitudes, are usually very small, or only developed near the surface and there spreading out almost like turf, their branching stems frequently lying on the soil or flattened on the rocks. It seems, in the high regions, as if, at a certain distance below the surface, all vegetable life has been frustrated in its growth, and that the Alpine plants have to enlarge themselves on their sides in order to maintain life, growing, flowering and propagating as they do, at a limit which they cannot pass.

Another peculiarity of high Alpine plants is, they do not have to depend on a succession of seeds for a continuance of life ; they are perennial and can propagate themselves by creeping roots, by shoots running under the surface, by stolons, and by tubers, and thus continue their species, without requiring, although many of them have, fruits and seeds as a necessary element of continuance of species.

In the short, warm season between the two snows, helped by the moisture from the melting snow, the hot rays of the sun cause them to produce leaves, stems, buds and flowers, which rapidly arrive at a complete development. At the beginning of spring, the fields in the highlands of the mountains teem with a marvelous spectacle of growth, and with leaves and blossoms of an intense vegetable life, which shows itself in changes of the aspect from day to day, and especially by groups of successive, abundant, and brilliant blooms, which clothe the sides and the sharp and turfy declivities and meadows, and even the steepest crags, with a magnificent vegetation of blue gentian, rosy saxifrage, pink erinus and dianthus, purple crocus, yellow draba, etc.

Under the surface of the ground, vegetation is also moving at this time with great activity ; the rhizomes, runners, roots, shoots, tubers, and all kinds of growth, invade and pierce the soil, more or less humid from the melting snow, and the vegetable life growth dies out after making new forms, not only during this beautiful warm season, but even under the warmth of the snow which protects it against ice and frost.

But it is in the springtime that this subter-



ACIDANTHERA BICOLOR.—SEE PAGE 10.

ranean work of germination and new growth especially proceeds, thus preparing the plants for the opening of those organs which develop subsequently in the open air, and blossom as soon as the snow disappears and the hot rays of the sun vivify them rapidly ; and this growth, even, goes on before all the snow is melted, and in it, frequently, come forth and blossom, the first of the Alpine plants. In those parts of the plant which are underground, in the autumn, are stored and enclosed the nutritive matter, the starch, sugar and albuminoid substances, which are therein kept in reserve for the new growth in the coming spring, and which pass through winter in vitality under the warmth of the deep snow. In the Alpine zone may be found two classes of plants :—1. Those limited to that zone only. 2. Those which are to be found both in the highest elevations and also on lower lands—and even on the plains.

M. Gaston Bonnier, Professor of Botany in the Faculty of Sciences, Paris, has, for several years, been making a series of experiments on the growth of plants taken from lower lands and planted in gardens which he had constructed at high altitudes in the Alps and Pyrenees, in the Alpine zone ; and in the *Annales de Geographie* of Paris, of July 15, 1895, he tells, with illustrations, the results as to the plants so cultivated ; these were, that plants, moved from the lower lands and plains into the Alpine zone, became dwarfed, the leaves, however, became a more intense green, the flowers more brilliant, vivid, and of a much richer color. He also found the colors of the flowers from the lower lands frequently became darker,—for instance, in the *Campanula rotundifolia*, the flowers, dark-blue on the plains, in the Alpine zone became of a violet blue ; often nearly black ; and the pale yellow flowers of *Saxifraga aizoides* became a rich orange. He also found that the climate of the Alpine zone had a decided action on the anatomy and tissues of plant life, especially as to the structure of the leaves ; they became, as we have said, after removal to it, a more intense and vivid green and thicker in texture, and the cells containing the chlorophyl were changed ; he thinks this resulted from the greater clearness and dryness of the atmosphere in the great altitudes, the general temperature being lower, the air less dense, and the humidity in warm weather, resulting from clouds and melting snow, being greater than in the lower lands ; we are inclined to think that something in the composition of the atmosphere may have also assisted in producing the results. He thinks the dwarfness and lowness of the stems and branches came from the weight of snow and the effect of intense cold in blighting the branches, causing them to droop ; we think the strong and rapid winds blowing at great height may also have assisted in producing the lowness of growth of the branches and their spreading habit.

He says : "If the plants of the plains are moved too suddenly to the Alpine zone, they will die ; and if the Alpine plants are moved too suddenly to the lower lands, they will perish ; but that there are plants in each region that can be adapted to the other." We do not think there is any doubt of this, if their habits, soil and necessary nutriment are studied and adapted to the particular plant ; that most, if not all, of both the Alpine and the Arctic plants, can be grown at low levels, especially if raised from seeds ; but a knowledge of the peculiarities and habits of the special plants it is desired to cultivate, must be first obtained and followed in their cultivation. For instance, there are Alpines which must be planted in ground which is moist, or kept so, and well drained ; others amongst stones and grit, or surrounded on the surface by stones ; some must be kept dry during winter, under sheets of glass ; others planted on steep declivities and in vertical crevices in a rockery ; and nearly all do better having cracks and crevices for the roots to penetrate, spread and run into ; for in the Alpine zone, many small plants will run their small wiry roots yards away from the portion of the plant above ground, and it is from these moist cracks and breaks that the plant gets life and survives the hot days of the short Alpine summer, during which rain does not fall, the melting snow is all gone and the air is parched and dry. Some must be planted in damp places among peat or moss and decayed vegetable matter, or even in ordinary soil kept damp and drained ; others want full exposure to the sun, and others, shade.

We are apt to think that the summits of very high mountains covered with snow most of the year are very cold places. Above the

covering of the snow, they are, but for the plants under the snow, the contrary is the case; its covering is warm during the Alpine winter and preserves them better than those exposed to cold of the low plains, which, although not so intense as that at great altitudes, does not give them such a permanent covering of snow. Another thing which injures plants on the former, is the frequent freezing and thawing which disintegrates the tissues of the plants.

Our own experience, from growing many of them, has been, that nearly all the Alpines can be grown at low levels, on a properly constructed rockery, and will well repay their cultivation, for it is most interesting to have, growing at one's door, Alpines which usually grow 8,000 to 14,000 feet above the sea level; and the conditions as to Alpines exist as do most of the plants of the Arctic regions, which can also be grown, with but little trouble, near our own firesides. ISAAC MYER.

Chestnut Hill, Philadelphia.

FRUITS AND VEGETABLES.

PROFITS IN BANANA CULTURE.—It is remarkable how many people there are among the lovers of fruits and flowers who, in the language of Scripture, "have eyes but see not and ears but hear not." The cultivation of the banana is the case in point. Banana fruit is now among the commonest of our fruit in market, and it is within the reach of even the poorest, and yet a quarter of a century ago they were scarcely known, to any great extent, out of the land in which they grew. At the present time, shipments are made from Jamaica to different parts of the world amounting to three millions of dollars annually. There is no reason why such an extended culture could not have been started a hundred years ago. It must be said, however, that the cheap and rapid means of transportation, by means of the steamship companies, has undoubtedly had to do with the progress in this industry.

MANY VARIETIES ON THE SAME TREE.—It has always seemed a good idea for anyone fond of variety, with a limited amount of space, to have a number of kinds grafted on the same tree. In this way, an apple, pear, peach or plum could be made to produce a varied collection; but the theory has not worked out in practice, for the reason that some varieties are constitutionally more vigorous than others, and the stronger growing varieties soon take all of the food to themselves and starve out the weaker ones. With a little good judgment in selecting varieties of uniform character, the idea may be worked out to a satisfactory conclusion,—or weaker varieties may be given a position at the top of the tree, for there is always more strength and vigor to be obtained in that position than in the lower portions of the tree. When there is little difference in the constitutional vigor of varieties, the plan may be worked out to a greater satisfaction. In the peach, for instance, there is very little difference in the characteristic noted. Nearly all peach trees have about the same ratio of growth, and, moreover, the peach is inclined to be a round-headed tree, with about as much vigor in the lower branches as in the upper ones. There ought to be more success in this line of experiment with the peach tree, than with any other class of fruits.

PROPAGATION OF RHUBARB.—Some varieties of rhubarb have the stalks more tender and larger than others, and again they differ in color,—some when cooked of a bright green, while others of a light pink. There is no preference, except as a matter of taste, the only advantage being that the pinkish tinge is preferred as more brightening the table. The seeds saved from a separate variety generally reproduce the variety pretty fairly, some few varying somewhat, but the majority maintaining the general characteristics. Seeds sown in the spring make strong plants by fall, which the following spring may be transplanted to the vegetable garden. It is generally, however, two or three years before rhubarb raised in this way comes to its best. Another way in which it is propagated is by dividing the root stocks. In the course of a few years, a single plant of rhubarb will make a dozen or more offsets or rather strong eyes, and a whole plant can be so divided that a piece of root with one of these eyes can be separated from the original plant and set out so as to go into business for itself. The advantage of propagating rhubarb in this way is that one can get good strong leaf stalks a couple of years sooner than by raising plants from seeds.

THE LECONTE PEAR.—Since the advent of the LeConte Pear, pear growing in the south has become a commercial success, which cannot be said of pear growing, as a rule, where confined to the old varieties of the European stock. The introduction of this pear and the Kieffer marks a new era in pear growing. They are both believed to be accidental hybrids between the Sand Pear of Asia and some of the varieties of the European race. In regard to the Kieffer, the Sand Pear and the Bartlett were grown together, so close, in fact, that the branches interlaced. Among the seedlings of this Sand Pear, the Kieffer originated, on the grounds of a gentleman of that name. The origin of the LeConte is unknown; but it is evidently a product of a similar circumstance. It is found to be as healthy and vigorous as the original Sand Pear. No disease, so far, has troubled it, and the usual insects that follow the pear seem to avoid it. Under some circumstances the quality is very superior; but this requires skill to bring about. In a general way, the quality is above the average of pears; but a special feature of great value is that they can be shipped in barrels like apples, a treatment which no other pear will stand. It is remarkable that attempts do not seem to have been made to produce a more extended list of varieties from these. Although hybrids of two very distinct species, they produce seed abundantly. It is hardly necessary to use the word "although," for horticulturists generally well understand that the dictum of some scientific men, that hybrids are necessarily sterile, is utterly absurd.

AN OLD PEAR TREE.—The oldest pear tree in the middle of France was destroyed by a hurricane, last November. This venerable tree, known as Queen Jane's Pear Tree, was said to be not less than six hundred years old. Circles of it have been sent by M. Chaubaud, an old gardener on the grounds who had charge of it, to all the botanical societies of Europe, to ascertain if a similar tree existed elsewhere.

—From *La Semaine Horticole.*

THE COS LETTUCE.—In the Old World, lettuce is divided into two great classes. One kind makes heads naturally; this class is called the Cabbage Lettuce. The other kind has large, broad leaves. To blanch this, the leaves are to be drawn together and tied at the apex. The Cos blanched in this way is estimated a much greater delicacy than the ordinary Cabbage kind. In America, they are not popular. It is on account of the extra labor required to produce them to perfection.

PEAR, BEURRE D'ANJOU. — We are accustomed to think of California, whenever some admirable specimens of fruit come in sight, but now and then we note instances where this noble fruit-growing State might hand down its colors without disgrace. A small box of Beurre d'Anjou Pears from Ellwanger & Barry, Rochester, New York, has a threatening attitude in this direction. From ten to twelve inches in circumference and weighing fourteen ounces and some over. What has the Golden State to say about it?

A FRUITFUL APPLE TREE.—I notice in the last MONTHLY (Nov.,) that a peach branch, 22 inches long, produced 33 peaches, and the question is asked "Can anyone report better than this?"

I have preserved a portion of a limb 4¾ inches long (Fameuse) from which I picked eleven apples, 2½ inches in diameter, all of an equal size. TIMOTHY WHEELER.

Moscow, Vt.

CUMBERLAND BLACK-CAP RASPBERRY. — Improvements in our native Black-Cap Raspberry continue, — the line of improvement being in the increase in size, pulpiness and productiveness. The Cumberland, originated near Harrisburg, Pa., is being introduced by Jackson & Perkins, of Newark, N. Y. The berries are said to be an inch across.

THE GERMAN PRUNE IN NEW MEXICO.—New Mexico seems destined to become a rival to California in plum culture, judging from a box of remarkably fine German Prunes, which reached our office as fresh as if just gathered from the trees. They were kindly sent by Mr. M. J. Nagel, of Santa Fe.

PRUNING CURRANTS. — Currants may be pruned during the winter. Red and white varieties should be thinned of young, weak wood, which does not fruit.

BIOGRAPHY AND LITERATURE.

THE LESSON OF THE FLOWERS.

Thanks to that human heart by which we live,
Thanks to its tenderness, its joys, its fears,
To me the meanest flower that blows can give
Thoughts that do often lie too deep for tears.

—WORDSWORTH.

PROF. T. C. PORTER.—Thomas Conrad Porter, Doctor of Divinity, and Doctor of Laws, famous in botanical circles as well as in classical literature, recently retired from his professorship of botany and zoology in Lafayette College, Easton, after filling the chair for over thirty years. The occasion was made memorable by tributes from the newspaper press, generally, for the valuable services rendered; not merely to the institution named, but for many years before his connection with it, and through life for the helpfulness to others in many walks of life. The picture of him, given here, was taken for the Philadelphia *Public Ledger*, which gave a full account of the ceremonies connected with his retirement. He was born at Alexandria, Pennsylvania, on the 22d of January, 1822, and has therefore nearly reached his 76th year. Well-known and honored as an author in general literature, he will be chiefly associated in the minds of our readers with botanical work. He is the author of the Flora of Colorado, published by the Government as part of the work of the Hayden exploring expedition, and has for many years been collecting material for a Flora of Pennsylvania. Numerous species of plants have been named "Porteri," in his honor,—and Dr. Torrey named a pretty Lobeliaceous genus *Porterella*, with the same intent. Though retiring from active teaching, it is a pleasure to record that Dr. Porter is still hale and hearty.

PROF. THOMAS C. PORTER, D.D., LL.D.

THE ESTABLISHMENT OF PUBLIC PARKS.—The importance of bringing together information concerning the establishment of public parks, cannot be illustrated to better advantage than it is in a little publication that has recently come to hand, under the above title and relating to the New York park system, which was prepared by Mr. Gherardi Davis, of New York, and read before the Historical Society of that city.

After making a brief statement as to the necessity of public parks in cities and the desirability of guarding them against encroachments, he gives the history of the park movement in New York from the first suggestion that was made in a letter published in the New York *Packet* in 1785, and addressed to the mayor and aldermen of the city, calling attention to the fact that "there is not in this great city one proper spot where its inhabitants can enjoy with convenience the exercise that is necessary for health and amusement."

He then goes on to give the history of Bowling Green, the Battery, and the various squares and parks of the city, from the time they were first suggested until they were acquired by the city and developed as public pleasure grounds, giving many interesting historical and other incidents connected herewith.

It is difficult for one unacquainted with such matters to realize the amount of careful investigation that is required to bring together and verify the facts and interesting incidents related in this pamphlet.

This pamphlet should be the forerunner of similar publications in other cities, for the subject is well worthy of the careful investigation of students in local history, and such facts and

incidents as are here brought together are not found in any other publications with the exception of the fragmentary and disconnected records in park reports and occasional newspaper and magazine articles.

There has never been made until very recently a systematic effort to bring together, in any of the important libraries, complete sets of park reports. Some park commissions even have not complete sets of their reports in their own offices, and almost every park commission is unable to supply many of its back numbers.

The Park and Outdoor Art Associations are bringing together as complete a set of park reports and other material relating to out-door art as can be obtained. Information thus brought together will be of the greatest value to all persons who are interested in the park movement, which has come to be such an important question in the development of American communities. WARREN H. MANNING.

CUNILA MARIANA—AMERICAN DITTANY.—The New York *Independent* says: "A good word for MEEHANS' MONTHLY, devoted to general gardening and popular botany, is always in order. The wild flower illustrated in color in the November issue is the American Dittany and the classic fame of the dittany is here noted, as its modern use. The American Dittany (*Cunila Mariana*) is so generally in use among the poorer classes in some parts of the South as an herb drink that to many Negroes the word 'tea' means only 'dit'ny tea;' and the story is told of a thirsty Englishman in the North Carolina Mountains who gladly accepted a cup of 'tea' from an old colored woman and then, bewildered at its unfamiliar taste, exclaimed, 'Do you call this *tea?* What is it?' The prompt answer came: 'Yes, chile, dat's *tea*. Some folks make deirs ob horsemint, but I always make mine ob dit'ny.'"

GENERAL NOTES.

PURIFICATION OF DRINKING WATER.—Dr. Percy Frankland, an English Civil Engineer, whose works on bacteria in connection with pure water have made him extensively known, has recently given an address to the Society of Civil Engineers in London on the question of purification of water. He frankly confesses that he is learning and unlearning every year, a confession many of us may as truly make. He now finds that bacteria of every description utterly disappears after water has been running for a little time; and he further insists, that before any attempt is made at filtering water, storage reservoirs for subsidence is an essential matter. An immense number of bacteria are taken to the bottom with the sediment and destroyed. These are the results of very careful experiments made during the year of 1885, and since his original work appeared. He regards sedimentation as almost sufficient for the purification of water. He still advocates slight filtration through sand in order to have the purification of water absolutely perfect.

A VERY HARD WOOD.—In the northern part of the Transvaal, grows a tree which produces a kind of wood so hard that it is impossible to work it until long after it is green. If the wood is hard and dry, it will resist all tools; even the best of steel can be broken on it. It cannot be easily burned, taking fifteen days incessant burning to transform the trunk to ashes. The wood, although very dense, is, however, much lighter than iron or steel; it is a species of ebony which the natives call "Abajou."

Translated by SARAH D. LANNING.
From *La Semaine Horticole.*

REMOVAL OF LARGE TREES.—American tree planters find no difficulty in moving large trees. Trees up to three feet in circumference, are frequently moved, and generally with great success. The *Gardeners' Chronicle* reports the removal of a large Purple Beech, which was 40 feet high and 6 feet 3 inches in girth at 4 feet from the ground. The tree was moved in 1880, and is still growing vigorously.

THE HORTICULTURAL ASSOCIATION OF PENNSYLVANIA.—This body, one of the oldest and most useful of State bodies for the promotion of Horticulture, will meet this year at Lancaster, on January 18th and 19th. Cyrus T. Fox, Reading, Pa., is the Secretary, from whom all information can be obtained.

PROF. PORTER.—Universal sympathy goes out to Prof. Porter for the recent burning of his herbarium.

DICENTRA FORMOSA.

OREGON BREECHES-FLOWER.

NATURAL ORDER FUMARIACEÆ.

DICENTRA FORMOSA, DECANDOLLE.—Leaves and scapes from the apex of thickish and almost naked, creeping rootstocks, a span to a foot or two in height; the former twice or thrice compound; the ultimate divisions narrow, and incisely pinnatifid. Flowers compound, racemose at the summit of the naked scape; corolla rose-colored, ovate-cordate, with short, spreading tips to the larger petals. (Brewer and Watson's *Botany of California*. See also Wood's *Class-Book of Botany*.)

Though this pretty species of Breeches-flower is referred to in some botanical works—notably Wood's Class-Book, as quoted—as being found in the eastern part of Canada, specimens in herbaria from these localities do not accord well with those from the Pacific Coast, and may be forms of *Dicentra eximia*. One may, therefore, accept the name of Oregon Breeches-flower as its popular one, for there it is most at home, and forms an important part in the wild mountain scenery of that delightful section of our country. Like its eastern relative, it may be found in bloom almost continuously, from spring-time through the whole summer, giving a charm to the deep, dense woods, where it has been blooming for ages, with no human eye to gaze on it or appreciate its beauty. Here,

"—— in the continuous woods,
Where rolls the Oregon, and hears no sound,
Save his own dashings,——"

Here it has been growing among

"———the hills,
Rock-ribbed and ancient as the sun; the vales,
Stretching in pensive quietness between;
The venerable woods; rivers that move
In majesty; and the complaining brooks
That make the meadows green,——"

all unknown, till it caught the eye of Dr. Archibald Menzies, the botanist attached to Vancouver's expedition, who seems to have collected it some one hundred years ago in Nootka Sound, one of the objective points of the cruise—Spain having ceded Nootka Island to the British Crown.

Few of our native flowers have given more trouble to botanists than the Oregon Breeches-flower. On its first discovery, it was regarded as a *Fumaria*, and described as *Fumaria formosa*,—the adjective *formosa* referring to its especial handsome character. Moriz Borkhausen, a German botanist, who published several treatises on botany towards the end of the last century, divided those fumarias with two spurs from the rest of the genus, under the name of *Dicentra*, referring to the double-spurred character, and which was adopted by DeCandolle on Borkhausen's suggestion.

It is figured under the name of *Fumaria formosa* in one of the early issues of the *Botanical Magazine*, plate 1335; and, as part of its early history, and its confusion with other species, the account of it is worth reproducing in full:—

"From the British Territory. This species approaches very near to *Fumaria Cucullaria*, No. 1127, and is the same as those mentioned as being preserved in the Banksian Herbarium under the name of *F. erubescens*. It was discovered by Mr. Menzies, at Nootka Sound, and introduced by him to the Royal Gardens, Kew, from whence it was most probably extended to the nurseries about town. It has a creeping, fleshy root, by which it increases rapidly. The habit is very similar to that of *Cucullaria*, but the scape is somewhat longer than the leaves, and is frequently much more branched and flexuose than in the specimen from which our drawing was made. Peduncles grow severally from the same point; are nearly the length of the corollas, which are pendent and of a bright carnation color; of very much the same form as *Cucullaria*, but the spurs are shorter and they are turned towards each other. The filaments also adhere slightly in two bundles, but are easily separable into six, inserted below the germen, which is spindle-shaped, and contains several elliptical ovules with a large caruncle attached to the base of each; a small, linear, colored bract is inserted at the base of each peduncle.

Our drawing was taken at Mr. Salisbury's

Garden, in Brompton, and we received very fine specimens from Mr. Knight, in the King's Road, who has observed it to be an excellent detergent, the piece of it rubbed on the hands getting out any stain much more expeditiously than soap; but in a single trial with the outer coat of a walnut, we did not find it to succeed."

The note referred to in the above extract, as appearing in No. 1127, published in 1808, reads as follows:—

"The change in the specific character (referring to *F. Cucullaria*) was suggested to Mr. Dryander, by a very nearly related species, found by Mr. Archibald Menzies on the West coast of North America, and preserved in the Banksian Herbarium under the name of *erubescens*, distinguished from *F. Cucullaria* '*calcaribus incurvis*'"

As already noted, the earlier botanists seem to have fallen into confusion as regards the species referred to by one another. In the Herbarium of the Academy of Natural Sciences of Philadelphia, is a specimen identified by Dr. Torrey as being the *Corydalis formosa* of Pursh, which is identical with a specimen collected by Goldie as *C. Canadensis*, and which is the species now known under the latter name. On the other hand, specimens from "the Peaks of Otter," by some early botanists, as noted by Schweinitz, are the Eastern *Dicentra eximia*. In Dr. Short's herbarium, the specimen from Lexington, Kentucky, where the Doctor says it is abundant, must also be referred to this species. Nuttall with these eastern misnamed specimens before his eyes, found, on the Columbia River region, a form with short, thick flowers, and, supposing it new, named it *Dicentra saccata*, from this baggy character; but this is now known to be one of the leading characteristics of our species. The incurved spurs, and short, thick flowers are usually in evidence, no matter how much variation there may be in other respects. The broad leaves and leaflets, having the look of some aconite, are also characteristic, as are the stout, creeping root-stocks. There are usually fewer flowers on the single stalk than on the species related to it. Under cultivation in eastern gardens, where it seems quite at home, it continues to flower until quite late in autumn.

A notable fact in connection with this species, as observed by the author, is, that among plants growing together in one locality, some will be found abundantly fertile, while others are comparatively barren. This is particularly true of various species of *Dicentra*, and of allied genera. One may have plants in the garden, of some one species, remarkably productive, and hence, in describing the genus, refer to it as abundantly fertile, not considering that other plants than the one referred to might be barren. In the author's garden, this plant, *Dicentra formosa*, bears seed vessels in ample profusion, though in its native woods many plants are seedless. This variation, in the seed-bearing ability of different plants of the same species, has been overlooked by biological authors. Some who have written on the subject would refer the infertility to the absence of insects, and the extra fertility of the others to being well fecundated by the insect visitors. Mr. Darwin remarks on the varying character of fertility in individuals, though he does not seem to have been aware of it as characteristic of different individuals. He observes that a plant of a close ally of the *Dicentra formosa*, *Fumaria officinalis*, was abundantly fertile when carefully guarded from the visits of insects, and he therefore classes the species amongst those which are self-fertile. We may see, from what has been written in this chapter, that had he chanced on plants of the same species that were naturally infertile, the absence of insects would probably be credited with the barren result.

As a matter of fact, our plant must presumably be classed with those which fertilize themselves. The stamens and pistil are so arranged that the anther and stigma are in such juxtaposition that only the flower's own pollen can be operative. (See fig. 5.) It is not impossible that a visiting insect might rarely introduce foreign pollen to the stigma, before the flower's own pollen has operated.

For the benefit of those who are interested in the personal histories of the early botanists, the collector, referred to as gathering this plant on the Peaks of Otter, was Frederick Pursh, who made large collections there.

EXPLANATION OF THE PLATE.—1. Plant proceeding from the end of the root-stock of the preceding year, with bud preparing for the root-stock of the forthcoming one. 2. Flower stem 3. Mature leaf. 4. Longitudinal section of flower, showing the interior arrangements - one and a half times enlarged. 5. Flower denuded of its floral envelopes, showing the close relationship of the anther to the stigma.

WILD FLOWERS AND NATURE.

THE BROOK.

I come from haunts of coot and hern,
I make a sudden sally
And sparkle out among the fern,
To bicker down a valley.

By thirsty hills I hurry down,
Or slip between the ridges,
By twenty thorps, a little town,
And half a hundred bridges.

Till last by Philip's farm I flow
To join the brimming river,
For men may come and men may go,
But I go on for ever.

—TENNYSON.

CARNIVOROUS GRASSHOPPERS.—I note what you say of the "carnivorous snails"; but who ever heard of a grasshopper eating human flesh? I have known for a long time that the Hoppers will eat clothes hung out to dry on a clothesline. Have known them to eat holes into ladies' dresses whilst the ladies were walking out in the garden. A few days ago, I was sitting near the sunny edge of a woods, talking some interesting talk with an old farmer, when I felt a sharp pain in the soft part of my wrist. Looking down, I noticed a wingless grasshopper, sitting on my wrist. Not being certain that it had bitten me, I watched it. It soon went to work again, and I noticed that it caught up the cuticle with its cutting teeth, working them like scissors. Bearing the pain in the cause of science, I allowed it to work on undisturbed. It soon had the blood flowing. It seemed to enjoy the red fluid. About this time, I stopped the proceedings by wringing its neck. Have been sorry since that I did not let it finish its meal. F. K. STEELE.

Festus, Mo.

ACCLIMATIZATION AND HARDINESS OF PLANTS.—About six or seven years ago, I planted out an English Walnut, which is considered tender in this latitude. This one, however, is living and thriving finely. It has passed two or three quite severe winters. The first year it was killed back about one-half, but seems to be injured less and less each year. At present, it is some twelve feet high, with a trunk about three inches thick, a foot above the ground.

The secret of its doing so well I consider to be that it was planted at the north end of a wood-pile and shed, where it is sheltered in winter from the southern sun.

It is well-known that it is not freezing which injures plants in winter so much as the winter sun and rapid thawing. Excessive evaporation through the influence of cold winds is also a source of damage. Standing where it is, this tree is sheltered from the sudden thawing, and also to some extent from severe winds.

This is a good point to remember in connection with the Southern Magnolia, which is tender here when young. But if one can get it through a few winters, it gradually becomes hardened and will go through a severe winter all right. One yard here contains a magnolia some twenty-five feet high. A few years ago it lost most of its foliage in a severe winter; but came out again all right.

The condition of weather in the latter part of the summer has much to do, also, with hardiness. Growing conditions late are sure to work mischief. A few years ago, an acquaintance kept her roses growing and blooming till very late in the autumn by copiously watering them every few days. The following spring, I enquired particularly about the condition of her roses, as I surmised that she would lose them all. Such was the case; and there were a hundred or more of them. I have some of the same kinds, and some considered even more tender, which have been growing in the open ground for the past seven or eight years. They include Marie Ducher, Perle des Jardins, Estella Pradell, Etoile de Lyon, Meteor, Gen. Tartas, Sombreuil, besides a large number of Remontants and Hybrid Teas. ERNEST WALKER.

New Albany, Ind.

Even in their own country, the ends of the shoots die in the winter time.

EUPATORIUM PURPUREUM.—The form of this species common in the swamps of this locality, which is, I believe, the type taken for the description in Gray's Manual, is a tall, weedy plant with usually only one stem from the root, bearing a dense corymb of light purple flowers well above the foliage. There is a lower-growing form of the species in New Jersey, which may possibly be *E. pur.* var. *maculatum*, as described in Coulter's Manual of Rocky Mountain Botany,—at least, the form answers that description. In a wild state, the difference between these two forms is possibly not too great to be classed as local variations; but, when each be brought to perfection by cultivation, they differ so much in appearance and habit of growth that to have no distinctive name for each would seem to be an error.

After transplanting some of these plants from a New Jersey swamp to the wild garden here (Haverford, Pa.), it was a surprise to find that, for the two years since, they have shown no tendency to increase in height, but have thrown more shoots from the root,—in fact, forming dense, bushy plants about five feet in height and three in breadth, hard to recognize as the ordinary Joe Pye Weed. The form in this locality, growing nearby under apparently similar conditions, still continues to show its health only by lifting its head higher into the air. The two forms are unmistakably different in appearance, as grown together here.

I have not looked for minute analytical differences, but the few here following are quite noticeable, viz: Flowers: disposed in more bracteate or leafy corymbs; more secondary or later small corymbs. Leaves: brighter green, more coarsely and sharply serrate; more uniformly broad ovate-lanceolate, more generally disposed in whorls of three.

There is still another form which I have occasionly noticed in dense, moist woodland which is rather low-growing and has flowers nearly white in color. It would be of interest to know if this form also had permanently acquired its color and size, which seem to be caused by the shade. F. W. BARCLAY.

Haverford, Pa.

THE BEGGAR WEED.—On page 225, December number of the MONTHLY, I find Florida Beggar-weed given the name *Desmodium viridiflorum*, a species native throughout most of the states east of the Great Plain. The true Florida Beggar-weed, which is cultivated in the Gulf region and especially in Florida, is *Desmodium tortuosum* D C. It has been called *D. molle* D C., hence the name "molly plant." Both of DeCandolle's names are now held to refer to the one species, and the former name has the preference. The plant is native in the West Indies and possibly in Southern Florida, but it is of comparatively recent introduction in other parts of the Gulf States. There has been much unfortunate confusion in regard to this really useful member of a genus, whose beautiful flowers are appreciated only by one who gets to the woods early on an August morning, but whose clinging pods receive the execrations of all who take a walk in the woods in autumn. The pods of Beggar-weed are less troublesome in this respect than are those of most of our northern species. One seed firm has sold seeds of *Cassia Tora*, a pernicious weed, for Beggar-weed. Other species of *Desmodium* are likely to be substituted. On the introduction of new plants like this, there is need of some safeguard to prevent the substitution of inferior or worthless species.

Washington, D. C. LYSTER H. DEWEY.

Mr. Dewey has the thanks of the conductors for the correction. Local names, when given to the outside world, are confusing. On writing to Florida for a specimen to identify properly, *Desmodium viridiflorum* was sent. It looks as if there were a number of "Beggar-weeds." *Desmodium tortuosum*, by the way, is given, by *Index Kewensis*, as a native of North America, which connot be correct. The West Indies are probably responsible for it.

BEAUTIFUL AUTUMN BERRIES.—Mrs. Edward Sayres sends from the Cliff House, Minnewaska, Ulster Co., N. Y., branches of several beautiful-berried shrubs, which are decorating the autumn days in that mountainous part of our great domain. Among them are the two deciduous hollies, *Ilex monticola* and *Ilex verticillata*, and a near relative, *Nemopanthes Canadensis*. They have a much more smilingly-healthy glow than when growing in lower elevations. In the package were fronds of *Asplenium montanum*, evidently, though gathered for extra fine *Asplenium ruta-muraria*. The locality must be a paradise to the autumn-going botanist.

INSECTS AND FLOWERS.—The more that is known about the habits of insects, the more it becomes apparent that what has been said, by writers of the Grant Allen type, has very slender foundation. Many pretty stories have been written regarding the object of color in flowers. Doctor Gray, indeed, writes of the ray-florets of *Compositæ* as being of the nature of flags, to attract insects to the disc florets. It is by no means intended to include Doctor Gray in the class of sensational writers referred to, for, at the time when the thoughts of Mr. Darwin were attracting such widespread attention, most of us were captivated by the plainly logical conclusions of this celebrated scientific man. Indeed, Mr. Darwin's statement, that bees would not visit the flowers of the lobelia, after he had cut the petals away, does seem conclusive. And yet, the thought might have occurred to some one that the bee had simply mistaken it for one in which the petals had already withered. Numerous experiments have since been made, especially by the bee-keepers in Belgium ; and it was found, that when flowers were covered so as to hide the color, but not the odor, they were visited just as freely, by the bees, as the uncovered ones. In fact, it has come to be regarded by bee-keepers as a truth, that it is the odor, and not the color, that attracts the bees. After all, we shall probably have to go even farther, and admit that winged insects have, at least, enough sagacity to visit any flower, even when color and odor are entirely absent. Any observer may notice this in early spring, when our gardens are full of early-flowering weeds. Many of these have neither color nor fragrance, and yet are visited just as freely by the bees as those of other character.

DAFFODIL VARIATIONS.—The range of variation in flowers, though evidently limited, can strike many changes along its line. The *Narcissus*—the genus to which the daffodil belongs—affords interesting illustrations. The one we now figure, taken from the *London Journal of Horticulture*, represents one in which the usual crown has given place to six separate organs resembling oak leaves. The morphological nature of this crown has long been a subject of doubt with botanists. The general belief has been that they represent six sterile stamens that have become consolidated into a single organ. That the crown is primordially of six separate organs, this variation definitely settles. But this explanation would render their original characters, to be of the nature of stamens, doubtful. There are already six perfect stamens, in two whorls of three each, as a perfect flower of this tribe should have, but the staminal origin of the crown would indicate that there might be four whorls of three each, which few botanists would grant.

A DAFFODIL VARIATION.

A few botanists have believed that, though we find no stipules in these plants, it may be only from retardation, and that the crown may be regarded as developed stipules in flowers where nature has generally suppressed them.

The study, as to how Nature makes flowers, is an especially charming one. The whole family of Narcissus, to which the daffodil belongs, furnishes material for the study. It is not done capriciously, as a child would make a play-thing. She follows a regular plan.

LARGE HONEY LOCUST.—Having noticed, in the July number of MEEHANS' MONTHLY, an account sent by Mr. Benjamin Heritage, of a large Honey Locust tree, growing at Mullica Hill, N. J., and the accompanying suggestion that "It would be interesting to know whether there are any larger specimens," I intended to measure and send the size of one growing here, in the yard of my sister, E. J. Phillips, where I reside; but, other things claiming attention at the time, it was neglected.

Having lately taken the dimensions of this beautiful old tree, I now send a note of them, hoping it may prove acceptable and interesting.

It measures *twelve feet* in circumference, two feet from the ground; *ten feet eighteen inches*, three feet from the ground—and *ten feet*,—four feet from the ground. So our Virginia tree exceeds the one mentioned, as being *eight feet four inches*, two feet from ground and *seven feet two inches* five feet from ground.

This tree came from seed brought from Frederick Co., Va., and planted not later than 1830. It has large spines, but bears very little fruit, and the beans are not surrounded by the sweet "honey" which some species afford.

We are sorry to say that, altho' its foliage was most luxuriant the past summer, and it is still clothed with leaves, now turning yellow with frost, it is showing signs of decay, on one side of the trunk, near the base, caused by some necessary trimming in the putting up of an iron fence near, and of some of the roots which had become an obstruction on the sidewalk; and we are warned that safety will soon require that we give up this old friend and landmark, which will cause regret with others as well as ourselves.

Its branches were cut back a few years ago, but are now widespreading and symmetrical and are much admired.

ANN M. SIDWELL.

Waterford, Va.

MISTLETOE ON FIRS.—A correspondent takes exception to the statement, in the December number, as translated from the French, of the mistletoe growing on firs in France. Another suggests that probably "Witch's Broom" or "Crow's Nest" branches, which arise from fungus attacks and appear like bunches of mistletoe, have been taken for the parasite in question. Not long since, the writer was called to look at a hugh bunch of mistletoe on a tall spruce tree, and, doubting the probability of this parasite locating on a spruce, an ascent of the tree was made, resulting, to the disappointment of the owner, in the finding of a bunch of twiggy growth commonly known by either of the afore-mentioned names. What is the objection to the evergreen as a host plant for this parasite? Possibly it is the resinous sap that most of this class of plants have that is not to its taste. There are, however, species of *Arceuthobium*, a close relative of the mistletoe, that take to juniper and other coniferæ in our country.

ASCLEPIAS CORNUTI.—In enumerating the uses of *Asclepias Cornuti*, in the December MONTHLY, you omitted to mention the one thing for which it is most valued in the Middle States, namely, its use as a pot-herb. In spring, when the young shoots are from six to twelve inches high, they are much sought for the table, being boiled as such other herbs as the cowslip, nettle, pigweed, and poke frequently are.

While on the subject of plants useful as food, it may not be amiss to note that the young shoots of the common Solomon's Seal are occasionally used exactly as we use its near relative, asparagus. WILLARD N. CLUTE.

New York City.

INSECT FERTILIZATION IN DICENTRA.—In addition to what is stated in the main chapter on *Dicentra*, it may be noted that, should a few flowers get foreign pollen, the species could not be classed with those to be benefitted by cross-fertilization. Of the myriads of seeds that any one plant produces in a season, a very small number grow to be again seed-bearing parents; and the few crossed seeds would be lost among the vast number of uncrossed ones.

WILLOW FLOWERS.—Among the early flowers to welcome back spring to us, the willow is prominent. The Goat Willow of Europe is a favorite in gardens. The male form is known familiarly as the Pussy-cat Willow. Our native willows are less showy, but are equally interesting. The hasty generalizations, of the recent past, saw in fragrant flowers an attraction to insects to induce cross-fertilization.

GENERAL GARDENING.

THANKS FOR THE FLOWERS.

Thanks for these flowers, whose sweet perfume,
Like whispers from their lips of bloom,
Pervades and gladdens all my room.

No sweeter ones in Ellwood's day
Bloomed 'round young Guilielma's way,
Herself a flower more fair than they.

—WHITTIER.

BLUE HYDRANGEA.—Mrs. Seliger says :—"About the *Hydrangea Hortensia* of a bluish color, spoken of recently, my conviction is that the original color was pink, from which the French, by crossing, produced a natural blue one. I have in my possession a pink and a blue one, also a perfect white. These always came true to color, but changed in tints as the time of their flowering extended nearly all the summer. I have another rare one that had, last summer, perfect blue male flowers in the centre of the umbel, surrounded by nearly white female blossoms of a great deal larger size. When it comes into bloom again, I will send you a flower of it. It has been greatly admired by all who saw it. One other fact, in this connection, I may relate :—Long ago, when in Germany, we used to bring home some red earth containing iron, from a certain mineral spring, into which we planted *pink hortensias*, which then produced *blue* flowers."

It is often well to let correspondence go without comment, as, while repeating what has gone before, some new thought often finds expression.

In the case of blue hydrangea, some points that have been placed on record show that soil, alone, has nothing to do with these results. Cases have been recorded where separate branches on the same plants severally produced white, blue, and rose-colored flowers.

Further, cases have been recorded where plants in tubs, with the soil unchanged for years, will change the tints of their flowers in certain years.

De Candolle's suggestion, that changes in the vegetative vigor induce changes in color, comes nearer what has been recorded in our country than any others. As this condition is influenced somewhat by soil, or by changes in treatment during some particular season, soil, etc., may have an indirect influence on the direct cause of the change.

THE ADVANTAGE IN EARLY PURCHASES.—One of the greatest hindrances to the promptness of nurserymen and eventually to the planter, more especially in the spring season, is the avalanche of orders frequently poured in to the nursery, just at or near the last moment for transplanting. It is frequently impossible for shipments to be made strictly promptly, and the planter is put to inconvenience by the delay, and, as occasionally occurs, the season, advances almost unawares to the detriment of successful transplanting. England is somewhat troubled with this same habit, as the writer learns from the *Journal of Horticulture*, which editorially brings up the subject in connection with bulb orders, and where it is well remarked :

"The habit of not ordering things till they are actually wanted, and then chafing because they do not come by return of post or the first express train, is a thoroughly bad one."

Then, too, in many cases, the purchaser, undecided as to exactly what is wanted, is hastened into a decision by the warning of spring, and the selection may prove less desirable than if more thought had been permitted.

The time for perfecting plans and preparing orders is in the winter months, when the nurserymen can answer more readily to questions prepared under less pressure of increasing hurry.

A prudent gardener will at this time be already at work on his plans, and preparing his lists for orders. What a boon to him it is, too, to have his mind relieved of such things during the busy months of spring, not to speak of the convenience by having his orders filled earlier, and his work therefore in better condition for the opening of spring. Surely, here the "stitch in time saves nine."

AN HERB GARDEN.—One of our correspondents, whose residence is known as "White Birch," at Elmhurst, Illinois, combines pleasure with instruction by devoting a portion of the grounds to a garden in which are growing a great variety of useful plants. She calls it the "herb garden." The list will be found very interesting and is given herewith. She says of the collection :—"I send also the list of herbs in my garden. Of course I understand that some of them are not literally herbs, or either herbaceous, but they are akin—used for medicine or perfumes, etc. I have left out some that might as well be included as those I have, such as Slippery Elm, cherry bark, etc. You, no doubt, will not consider many of them relevant, but I take such pleasnre in cultivating them, that I am in danger of overstepping strict rules :

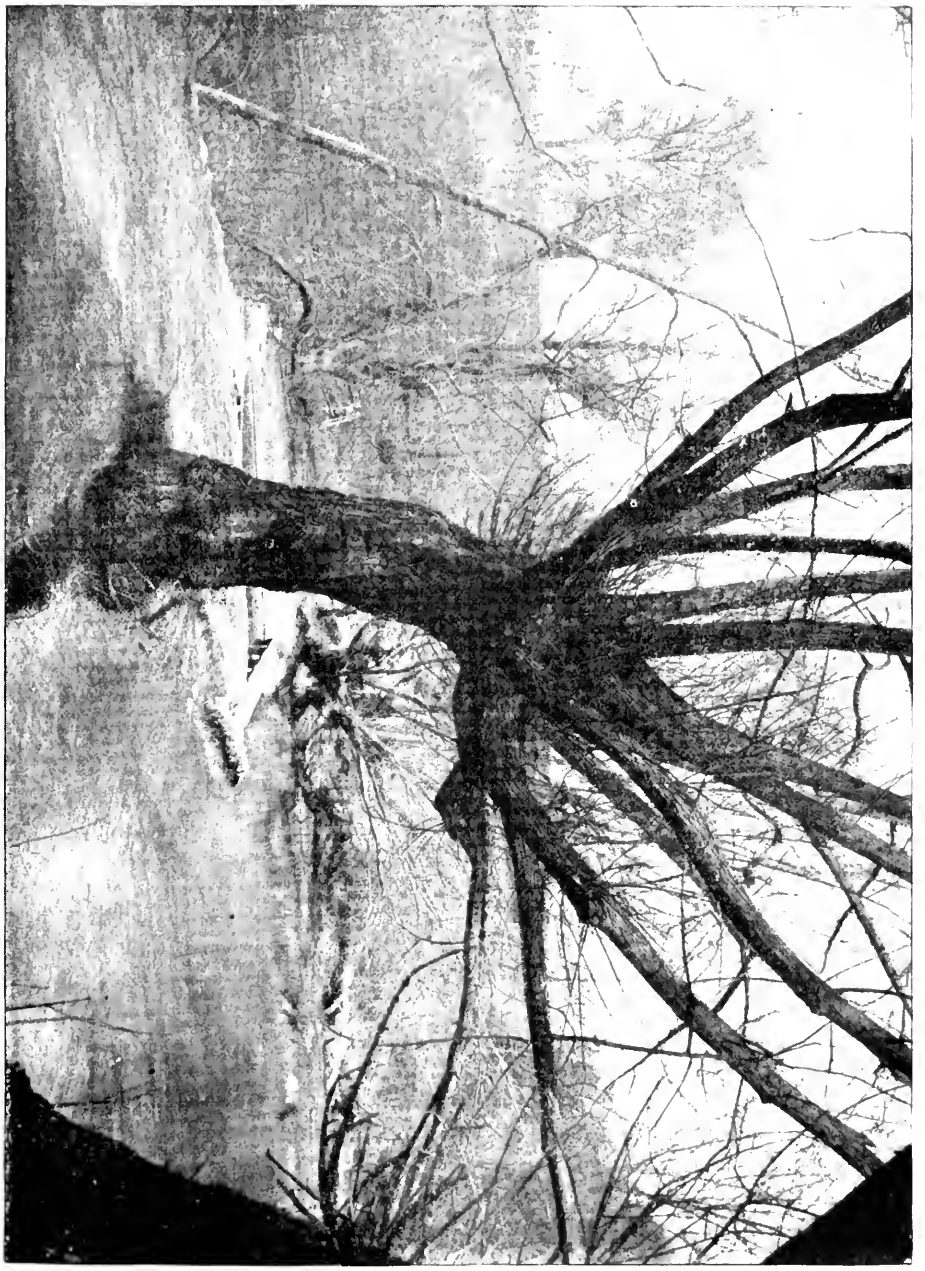
Anemone Pulsatilla,
Asphodelus luteus, Yellow Asphodel,
Acorus, Sweet Flag,
Arnica,
Anise,
Ambrosia,
Aconite,
Artemisia Abrotanum,
Artemisia frigida,
Aristolochia,
Baptisia australis, Wild Indigo,
Betonica officinalis,
Boneset,
Basil, Sweet,
Bryonia,
Borrago,
Burnet,
Burdock,
Balm, Variegated,
Balm, choice,
Balm, Purple,—Wild Bergamot,
Bee-Balm, Red,
Bergamot, true,
Bergamot, 2nd,
Bloodroot,
Chamomile, *Anthemis nobilis*,
Chamomile, high, yellow,
Chamomile, low (from World's Fair.)
Costmary,
Calaminth,
Cassia Marilandica, Senna,
Coriander,
Cummin,
Catnip,
Caraway,
Chivet,
Castor Oil Bean,
Calendula,
Colchicum,
Cedronella,
Convallaria,
Dill,
Digitalis,
Dogwood,
Elecampane,
Elder,
Fern, Sweet,
Fraxinella,
Fennel,
Flax,
Figs,
Gold-thread,
Hellebore,
Henbane,
Hops,
Horehound,
Hyssop,
Horse-radish,
Indian Physic, Ipecac,
Iris Florentina, Orris-root,
Lobelia inflata,
Lovage
Lavender,
Lemon Verbena,
Lemon,
Mertensia Virginica, Lungwort,
Mint Wild,
Motherwort,
Marjoram, Sweet,
Mandrake,
Mustard,
Mulberry,
Nigella,
Opium Poppy,
Pyrethrum,
Pennyroyal,
Pennyroyal, No. 2,
Parsley,
Peppermint,
Poke-Weed,
Rhubarb,
Rose,
Rosemary,
Sassafras,
Saxifrage,
Sweet Cicely,
Sage, Common,
Sage, Red,
Savory, Summer,
Savory, Winter,
Santonin,
Sweet Woodruff,
Saffron,
Spearmint,
Sarsaparilla,
Snake-root,
Thyme,
Thyme, Variegated,
Thyme, No. 2,
Tansey,
Tobacco,
Tarragon,
Vincetoxicum acuminatum, Mosquito plant,
Valerian,
Witch Hazel,
Wormwood,
Wintergreen,
Yarrow, Rose,
Geranium maculatum."

The physic garden department of some medical colleges could hardly excel this collection.

THE GREEN ROSE.—When figuring the green rose, recently, it was noted that, though grown as a curiosity in past times, it promised to come in again to popular appreciation by reason of its practical value in adding the much-prized green to the brighter tints in a bouquet's make-up. In a recent exhibit of rare and curious flowers, for the charities of New York, held in the Ball-room of the Astoria, this green rose was shown by Mr. John A. Boyle, gardener to Mr. James W. Elwell, of Brooklyn, of whose beautiful grounds we have given illustrations. It was regarded as among the main features that gave interest to the occasion. The New York *Herald* notes :—

"The main collection of violets and roses is in the conservatory, where two wonders were displayed—a green rose and a cluster of midgets, the latter the smallest roses ever produced, tiny things little larger than a silver five cent piece. The entire display includes numerous rare floral products, many of them of a variety few persons have ever seen."

THE WILLOW IN LANDSCAPE GARDENING.—Variety with harmony is one of the canons of successful landscape gardening. Much thought is bestowed on surface lines, and the proper massing and grouping of trees. Not as much a thought is given to the effects in harmonious variety, that the trees themselves may afford. An intimate knowledge of trees should enter largely into the technical education of the landscape gardener. Too often, it holds a minor place. Few trees offer more capabilities than the willow—the willow in any of its many species. Herewith is a sketch of a White Willow, *Salix alba*, in connection with a wild piece of natural scenery on the Cresheim, one of the tributaries of the famed Wissahickon. The perfect naturalness—the wildness—is the chief charm of this bit of landscape. The willow adds largely to the make-up of the scene. It would be comparatively tame without it. The tree has a somewhat unkempt appearance, and would be utterly out of place on a well-trimmed lawn. But it has found its vocation in the place where it grows. There was not much earth to give it a start in life, but it made good use of this slight advantage. As in the parable, the single talent gained.



SALIX ALBA, WHITE WILLOW

POTTING CACTUSES.—With the advent of February, it is time to think about re-potting cactuses, where needed, and getting them started for summer growth. It is very seldom, indeed, that re potting must take place, and such times can only be determined by judgment and experience. Comparatively young plants will naturally require more frequent potting than older ones. The amateur is more apt to err on the side of frequent potting, as it does seem unusual to cramp the roots as it is necessary to do with this curious class of plants. In many cases, it is only necessary to shake the soil from the roots and replace (in same pot) with new soil. This method is advised wherever possible, and the re-potting may then be done more frequently, giving the amateur the necessary experience as to increase of roots in a given period. Any roots that appear dried or dead should be cut off close to stem ; and, in potting, care should be taken to have the roots spread out as much as possible and not bunched. A dull-pointed stick would be useful for packing the earth well around the roots, which is very essential.

As to the proper potting soil, there are slight differences of opinion. The chief necessity is to have thorough drainage, without which the plant will rot off at the base. Gravel placed in the bottom of the pot, or coarse sand, will make a good drain. Lime rubbish is recommended by some but rejected by others. In small quantities it is doubtless beneficial, especially in the case of the strong-growing kinds, as *Cereus*, *Opuntia*, etc. Given thus in moderation, it tends to sweeten the soil without absorbing too much moisture. Small pieces of brick are sometimes used to aid drainage, but it is not to be encouraged, as while it loosens the soil it also absorbs the moisture and retains it, making a damp soil. Powdered charcoal, sand and ordinary good loam may be added in equal parts. Leaf-mold is used by some, but it is apt to sour.

After potting at this season, presuming that the plants have been kept cool and dry during the winter months, they should be introduced to gradual heat and water, increasing as the season advances. For the stronger growing kinds, liquid manure may be beneficially applied. At all times, plenty of light is needed —place them near the glass, if convenient. Regularity in temperature and watering is very necessary for good growth. While handling them at this time, it would be as well to carefully look for insects that may have escaped notice during the winter. A little attention this time will save increased work in a busier period.

THE BEGGAR-WEED.—I noticed, in the December number of your MONTHLY, a brief reference to the Beggar-weed. This plant, although having only recently become generally known here, is becoming quite a favorite with Florida farmers. It grows admirably in our sandy soil, and possesses some exceptionally valuable properties as a farm plant.

On account of its high feeding value, it is one of our best forage plants ; and, growing rankly, it affords several crops of forage in a single season. Horses and all other stock eat it with great relish ; and, for stall feeding, it is regarded as good a farm provender as the best northern hay.

It is one of those valuable leguminous plants that have the property of transferring nitrogen from the air to the soil, and it possesses this property in a high degree.

The roots of the plant are very long, and it possesses the unusual property, on that account, of being capable of bringing food for plants of ordinary growth from depths that their roots cannot reach. It is therefore a good plant for improving the mechanical condition of a soil and for renovating exhausted soils.

THOS. R. BAKER.

NEW OR RARE PLANTS.

HYBRID WICHURAIANA ROSES.—The destiny of a new plant is sometimes broadly apparent at the outset. That this is evident in the case of Manda's Hybrid Wichuraiana Roses, can readily be recognized. Of course, the great popularity of the parent Wichuraiana, of whose character the hybrids chiefly partake, is the potent factor in inducing the public to take up with the new on such short trial, for these roses were only first introduced, with small plants, in the spring of 1897.

It seems safe to say that the common Wichuraiana is not now, nor likely ever to be, greatly improved in the eyes of those whose tastes lead them to prefer a clear white, single-flowered rose. But, for variety sake, these

hybrids are wonderfully acceptable, and it is surprising their need was not long since noted, though it must be remembered that *Wichuraiana*, itself, is comparatively new, being first described in 1871 as *Rosa Luciæ*, and in 1876 by the name under which it is universally known, its general dissemination being within recent years.

The chief desirable points of character of both the species and hybrids are their extreme hardiness; their adaptability to almost any soil or position, but particularly to poor, gravelly banks, etc.; their abundant proclivity for blooming; their glossy green foliage, which retains its bright color until very late in the fall—in fact, early winter;—and most largely for their closely-trailing habit. Few plants can be said to combine such desirable features, and assuredly no other roses. Because of these advantages, the plants have become popular for cemetery planting, winning the name of Memorial Rose,—and what could be more truly deserving of use for such a purpose than a low mat of neatest green foliage decked with a mass of flowers that are the more appreciable because they are roses! They are likewise suitable for pot-culture and forcing, and, by their trailing habit, may

decorate a group of plants very effectively, young plants, two and three years of age, flowering with extreme productiveness.

A remarkable report has been made by the introducer, of a growth 18 feet 8 inches on a young cutting plant of one of the hybrids. Of course, this is beyond the average growth, but it nevertheless shows possibilities not possessed by other running roses.

The size of the flowers varies from one and one-half to two inches in diameter, according to the variety. The following description of the four hybrids, is given by the originator, who says :—

Manda's Triumph.—Hybrid of free growth and clusters of from twelve to eighteen double white flowers on even a small-sized shoot, sweet-scented.

Universal Favorite.—A free grower, producing long, branching shoots, and soft light pink, double flowers, strongly perfumed.

South Orange Perfection.—This is a gem, with free growth close to the ground, and multitudes of the most perfectly-formed, double white flowers, soft blush pink at the tips, changing to white.

Pink Roamer.—This is without question a hybrid between the Sweetbrier and Wichuraiana, and carries the former's characteristics of bloom; while the growth, which is very rampant, partakes more of the Wichuraiana. The single flowers, which are produced in close heads, are bright rich pink, with almost a white centre, which lightens up the orange red stamens, producing an effect which, combined with the fragrance, makes it one of the most valuable roses.

PHYSALIS FRANCHETTI.—The attention of the horticultural world has been recently attracted to an introduction, from Japan, of a perennial *Physalis* under the specific name of *Franchetti*, and it has occasioned considerable speculation as to its real value. Conflicting reports are heard from different quarters, and one hardly knows whether to think well of it or not. Undoubtedly, the dealers who undertake to push "novelties" have overstepped its true merits in their efforts to sell it, to the injury, somewhat, of what worth it really possesses. A small branch was sent to MEEHANS' MONTHLY, and gave a very fair impression of it. Its sole beauty lies in its ornamental heart-shape calices that completely surround the small, tomato-like fruit, both of which, when mature, are of a deep red. Many of our readers may be familiar with its near relative, *Physalis Alkekengi*, commonly known as the Winter Cherry, the fruit of which is considered quite worth preserving, and can draw some comparison between the fruit of the two. The color of *P. Alkekengi* is a light orange yellow; and the size of the calyx is only one-half as great as the other. The small branch previously referred to had about six of the brilliant ornaments on, and, if the whole plant had contained as many, it could be considered very desirable. *P. Alkekengi* would rarely be used for ornamental purposes; its fruit has a rather agreeable flavor, described by some as similar to a sweet orange.

The subject of our sketch has been widely advertised as the "Chinese Lantern Plant," though the resemblance is somewhat distorted. It belongs to the order *Solanaceæ*, which includes the potato, tomato, red pepper, egg-plant, etc.

If any of the readers of MEEHANS' MONTHLY have had experience with either of these species, their recital would doubtless develop many interesting facts.

FRUITS AND VEGETABLES.

CHEAPER PLANT FOOD THAN GROUND BONES.—Estimating the value of whole bones at $10 per ton and cost of grinding them at $10 more, will make the cost of one ton of ground bones $20.

Suppose an average ton of bones to contain 60 pounds of organic nitrogen and 400 pounds of phosphoric acid; 375 pounds of nitrate of soda will furnish 60 pounds of nitrogen and 135 pounds of soda.

Thirteen hundred and fifty pounds of powdered phosphate of lime 30 per cent will furnish 405 pounds of phosphoric acid. This mixture will cost, with nitrate of soda at 2½ cents a pound and powdered phosphate of lime at ¾ cents a pound, $17.25 for only 1,725 pounds, equal in nitrogen and phosphoric acid to one ton ground bones.

The nitrogen in nitrate of soda is in its most available form. There are also 135 pounds of soda, which is not to be had in using bones alone.

The phosphoric acid in the powdered phosphates of lime is more available than the phosphoric acid in ground bones, because the powdered phosphate of lime is in a much finer state of division than ground bones, and fineness of division is the measure of its availability. The 135 pounds of soda are equivalent in alkaline action to 202 pounds of potash.

Professor Wagner says, in regard to the effect of soda, "There is a direct effect of it, and this direct effect has proved, during my investigation, of such importance that further researches are of great moment." In his opinion, "the decided preference expressed by Schultz-Luptiz for a kainit as a potash (kali) salt, is, like the better yield produced by the use of nitrate of soda as against sulphate of ammonia, attributable to the effect of the soda which kainit, as well as nitrate of soda, contains, and which, heretofore, has not been properly valued." ANDREW H. WARD.

GRAPE GROWING IN MISSOURI.—I note your remarks, on p. 236, under above heading. Eastern grapes are sold at this point (Mo.) at 20 to 25 cents per 10-pound basket—basket included. Where is the profit to the eastern grape grower? One quarter of a cent a pound is his profit. The eastern grower will grow fat—growing grapes—at such growing prices. But we cannot sell our grapes here at any price. Last fall they rotted on the vines, just because we could not sell them at 20 to 25 cents per 10 pound basket. Just as soon as our grapes had all decayed on the vines, then the eastern grapes began to come in, and as many as 200 baskets were sold here per diem; and the demand has kept up right along for the past two months. I do not understand it. F. K. STEELE.

A PEAR-SHAPED APPLE. — Moquin-Tandon says there is, in Saint Valéry and several other gardens, a female variety of the common apple, (*Pyrus dioïca*, of Moench) that is remarkable for its proliferous fruiting by artificial means.

This tree, apparently an ordinary apple tree, produces downy peduncles which sustain peculiar flowers with a calyx of ten leaflets arranged in two rows. The corolla and stamens are abortive. There are fourteen styles, slightly hairy at the base, and surmounted by an oblique stigma very apparent.

The first few years after flowering, its owner, amazed and disappointed with its not bearing, was going to cut it down, when a physician advised artificial fecundation, which succeeded perfectly.

To each flower is applied a perfect flower from any apple tree, and a colored ribbon tied to the fertilized bunch in order that the fruit may be readily recognized.

These apples of the hermaphrodite flowers which were used differ from others in size, color, and flavor. Inside, there are fourteen cells, arranged in two parallel parts, of which five are placed like those of the common apple, occupying the middle of the fruit; the other nine, smaller, are found at the end.

From *Lyon-Horticole*.

CUCUMBERS AND MELONS MIX.—I planted cucumbers and muskmelons; the beds joined. The muskmelons vined well, but there were no melons that even started. A cucumber vine found its way into a hill of melons, and in process of time there was picked (before the freak was noticed) a something, (I know not what), similar in *form* to a cucumber, but the *color* was that of a muskmelon. In cutting it open, the odor and flavor seemed to be just half way between a cucumber and a muskmelon.

Remember, there was no melon in the patch, only *vines*.

Perhaps this is a common occurrence, though it is new to me.

Has such an instance been noticed before?

How did the cucumber acquire the *color*, odor and flavor of the melon?

This circumstance would seem to confirm a belief which I have long held, that the *surface* of fruits is susceptible to atmospheric influences. TIMOTHY WHEELER.

Moscow, Vt.

In so far as hybridizing—or, as people say, mixing by the pollen—is concerned, it is so easily tested by experiment that there need be no argument. It is understood that Cornell experiments, to have them hybridize, were failures. They would not mix.

WATER AT PLANTING. — Those who have tried, say that, when planting cabbage in a dry time, water put into a trowel or dibble hole a day before, is better than if applied at planting.

BIOGRAPHY AND LITERATURE.

FORCE OF CHARACTER.

A little of thy steadfastness,
Rounded with leafy gracefulness,
Old oak, give me,—
That the world's blasts may round me blow,
And I yield gently to and fro,
While my stout-hearted trunk below
And firm-set roots unmoved be.

—LOWELL.

ALEXANDER CAIE.—In the Old World, the gardeners of the last generation were a grand body of men. In knowledge and general intelligence, they raised gardening to the rank of the learned professions. Indeed, in many respects, the gardener was the more intelligent. While most of the learned professions had the bulk of their followers stuffed with the learning of the schools, merely, the gardener had practical use for a broad range of intelligence. For all-round knowledge, few professions could produce abler men than that of gardening.

In the early explorations of our country, many eminent men were gardeners. Pursh, Lyon, Frazer, Seemann, Drummond, Hartweg, Douglas, and others that might be mentioned, were all gardeners; and many of this Old World class found a home in private establishments.

Most of those who have done such honor to the profession have passed away. One of the most recent to leave us is Alexander Caie. He was born at Partick, near Glasgow, in August, 1811; was apprenticed as a gardener, and took a subsequent course in botany under the then Mr. William Hooker, — subsequently Sir William Hooker,—in the Glasgow Botanic Garden. Like so many of the old school of gardeners, he was induced, to make a home in America, by the late Robert Buist. He arrived in Philadelphia in 1838, becoming gardener at the Camac place, now one of the most populous portions of the great city of Philadelphia. Under his management, it became celebrated. Downing's *Landscape Gardening* refers to it as a model. For years this establishment was the chief supporter of the exhibitions of the Pennsylvania Horticultural Society. Though of late years retiring from active life, conversation with any intelligent person was a source of great pleasure to him, and of profit to the listener. Anecdotes of Sir William Hooker, and others of his early friends, were always entertaining and instructive. It is to be regretted that ranks, so ably honored by Alexander Caie, are being so rapidly thinned, and the whole race be as the Mound-Builder's story.

DAHL AND THE DAHLIA.—Where does Mrs. Orcutt find it recorded that Linnæus was annoyed that Dahl returned from the New World with the Dahlia? Linnæus died in 1778. The Dahlia does not seem to have been known in cultivation in the Old World before 1802. It was raised from seed, some half dozen years before, by the famous priest-botanist, Cavanilles, at Madrid, from Mexican seed—all this according to the records. It would be interesting to know if these records are wrong? I had not, until Mrs. Orcutt stated it, heard that Dr. Dahl ever visited the New World.

GEORGINA.

A. R. WHITNEY. — At Franklin Grove, Illinois, died, on the 15th of December, A. R. Whitney, who was one of the horticultural pioneers of Illinois. He was remarkably successful in apple culture, and his large orchards became famous. He entered on the manufacture of vinegar on a large scale, and Whitney's Cider Vinegar became the standard for all that was good in that line. He was celebrated among his fellows for his kindly nature and merry disposition, and the wide circle, that knew him, parts from him with regret.

ELWOOD PLEAS.—Prof. Elwood Pleas, eminent for his knowledge in many branches of science, and in connection with newspaper life, died at Spiceland, Indiana, on the 20th of December, from blood poisoning through a small scratch, in the 66th year of his age. His ardent love of nature made him an ever-welcome friend.

LINNÆUS.—That good often flows from what seems evil, is illustrated by the error in our magazine which made Switzerland out of Smaland. It has brought the following notes, and a portrait of Linnæus as he was when a young man in his tour through Lapland. The first note is from Mrs. Seliger, of Hartford, Conn.

"Seeing, in your November issue, the picture of Linnæus as an old man, I was reminded to produce a copy of one taken when he was a young botanist, said to be from the only original in existence. I cut it from a circular issued to announce the publication of a German work on plants, called, *Das Schuman Gilg'sche Pflanzenreich*. It is a sample of the illustration of that work."

The next note is from Mrs. Kellerman, of Columbus, Ohio:

"In the November number of MEEHANS' MONTHLY, a short account of the life of Linnæus is given, in which is stated that Linnæus was born in *Switzerland*.

In the Life of Linnæus, by D. H. Stoever, published in 1794, it is stated that Linnæus was born at Râshult, a small village in the province of Smâland, *Sweden*, which must be correct, as Linnæus' parents lived in Sweden, and he grew to early manhood in the province in which he was born.

It is told, in this story of his life, how he fell in love with the daughter of Moræus, who was an eminent and wealthy physician. Moræus objected to Linnæus because he was poor and because 'Botany appeared to him too uncertain a branch of fame and support.'

He therefore advised Linnæus to become a physician, and said his daughter should remain unmarried three years longer, and, at the expiration of that time, he would give his ultimate decision. Think of the hopes long deferred! Linnæus had not the means to thus prosecute his education, but his lady love advanced the money for him, and thus he was enabled to win the consent of her father."

The three years' probation is correct. That the lady advanced money is a fable. See his letter, Sept. 12, 1739.

GARDEN AND FOREST.—Lovers of horticulture will learn, with great regret, of the discontinuance of *Garden and Forest*. In the Old World, gardening, for its own sake, is part of a polite education. A society person would not be thought affected when calling a plant by its botanical name, or for being able to distinguish one species of oak from another. *Garden and Forest* has battled bravely to make intelligence in the garden and in the forest as respectable and lovable here as in the Old World. It leaves the field with high honor, and its proprietors may feel a pride in their work, though it proved so unprofitable to themselves.

THE VETERINARY PROFESSION.—This is the title of a booklet, sent by Prof. Leonard Pearson, State Veterinarian and of the University of Pennsylvania. It contains a great amount of valuable information regarding the study of horses and other animals, and appears to be intended for gratuitous distribution.

CHAS LINNE.

GENERAL NOTES.

LAWS AGAINST WEEDS.—The United States Year Book of Agriculture says :

"Poison Ivy being so great a public nuisance, it is strange that no legal measures have ever been carried out to suppress its growth. Municipalities protect their people against diseased food by the appointment of inspection agents, and farming communities defend themselves by bounties against the ravages of animals. Why should not this plant in some way be provided against ? "

It is much easier to sit down and write than to ascertain what has been done. Weed laws abound ; but the weeds laugh and grow fat on them. A few years ago, Fairmount Park, in Philadelphia, had some trouble with the Poison Vine. The public prints made an outcry. The reply was the usual one in these cases: "City Councils do not give us enough money." Councils made an appropriation of $1,000—enough to destroy every plant. But they were as bad as ever. For several years in succession, appeared the item in the annual appropriation bill—"For the destruction of Vines in Fairmount Park, $1,000." But the Poison Vine flourished more and more ! To-day, there is probably no more fertile area of Poison Vine than exists in Fairmount Park. The truth is, law will not destroy weeds,—nor will money. The easiest thing in the world, is the destruction of a weed ; but, strange to say that common sense in these matters is the most uncommon of all things. Neither law nor money will supply a lack of brains.

ACCLIMATIZING METHODS OF NATIVE EAST INDIANS.—It is said the native ryots of India will not use imported carrot seeds, but only such as have been acclimatized, and they effect the acclimation in this way :

" The acclimatized seed is obtained in Western India by digging up the carrot when its root has attained about one-third its full size, and cutting off both the root and the leaves or 'tops' (which are eaten as a *baji*, or, as we say, 'greens') of the plant within a couple of inches of 'the crown of the root.' The portion of the root remaining attached to the stalk is then deeply incised cross-ways and dipped in a strong compost of the mixed dung of the pig and buffalo and virgin-earth, the lateritious earth of the Deccan being preferred with a little assafœtida added, and as much liquid-manure as will reduce the mass to an adhesive paste. The roots are then, with the usual religious ceremonial, planted out and watered, and in due course produce strong flowering stems and large umbels of characteristically aromatic fruit."

PLANT NAMES.—Whether we should take names of plants just as they were originally printed, though manifestly ungrammatical or clearly containing typographical errors, or whether we are to be bound to these errors when once made, has been a subject of discussion with those who desire to purify nomenclature. When it was decided to drop the accepted name of *Carya* for the Hickories and adopt the barbarous name of *Hicoria*, a dispute arose because the printer had evidently taken Rafinesque's bad hand-writing for *Scoria*. It is well that it was finally settled that the error could be corrected, or it might have to be again changed,—the Bulletin of the Torrey Botanical Club desiring "specimens of *Hieoria !* "

GOOD ROADWAYS.—Philadelphia claims to have a greater length of paved streets than any city on the continent. Possibly some of our readers may take this conceit out of her. Eleven hundred and six miles is the amount paved. There are only two hundred and ninety four miles yet to be paved. Fourteen hundred miles is the total length of the whole city streets. A large number in addition are yet on the plan, but are not yet in the possession of the city. For paving, granite block, sheet asphalt and vitrified brick are chiefly used. There is some little broken stone roadway, but unpopular.

PYXIDANTHERA BARBULATA.

FLOWERING MOSS.

NATURAL ORDER DIAPENSIACEÆ.

PYXIDANTHERA BARBULATA, Michaux.—A small, prostrate and creeping evergreen, leafy throughout, loosely branching; leaves lanceolate or somewhat narrowed below, subulate-acuminate, when young pubescent at the base, much crowded, a quarter inch long; flowers abundant (in early spring), closely sessile; corolla white or tinged with rose, open campanulate; its lobes (2 inches long) cuneate-obovate, retuse and obscurely erose; filaments ligulate. (Gray's *Synoptical Flora of North America.* See also Wood's *Class-Book of Botany*, and Chapman's *Flora of the Southern United States.*)

Seldom have art and science joined hands and traveled along pleasant paths so happily, during the progress of our work, as in the picture of the Flowering Moss here presented. The picture, simply as a picture, will challenge universal admiration; while the botanical details, more than usually complete, give the student a clear insight of one of the most unique of American wild flowers.

No picture has hitherto appeared that does the plant full justice. Dr. Gray, in the work from which the description is here taken, refers to plates by Michaux, Gray's "Botanical Text Book," and Lindley's "Vegetable Kingdom,"—but these are concerned chiefly with the peculiar structure of the flowers. A colored picture is given in plate 4592 of Hooker's "Botanical Magazine;" but this picture was taken from a small, round tuft taken to England by Sir William Hooker after his visit to America, and which with trouble was made to grow.

The difficulty of getting this wildling of nature to submit to the gardener's art, in common with some other distinctively American plants, has often been commented on. To fully enjoy all the pleasure the *Pyxidanthera* is capable of affording us, one must pay it a visit in its native home. This is mainly in the sands of New Jersey, in those sections known as the Pine Barrens—huge flats where *Pinus inops*, and *Pinus rigida* are profusely scattered, but not herded together as to crowd out herbaceous vegetation. Though it will sometimes flourish under a forest of pine, after the trees become densely packed, and when other kinds of plants have given up the contest; it never shows to such advantage as when there is enough light to permit other plants to keep it company. The specimen figured was taken from a spot which, rich in decaying pine leaves, had the asparagus-like shoots of *Baptisia tinctoria* pushing up among them, and which, later in the season, would charm the lover of nature with their bright golden flowers. Nature's admirers could probably secure no greater treat than by a visit, in early spring, to the Pine Barren region in New Jersey, where the *Pyxidanthera* dwells. If not the earliest plant to welcome the return of spring with garlands of flowers, it is certainly among the earliest—the violet, beloved and bepraised as it has been by the poets, not excepted. It does look like moss, and, for once, the popular name of "Flowering Moss" is felt to be appropriate; and the little, pinkish-white pin-heads, pushing out from what appears to be masses of moss—flowerless moss—is one of the pleasant surprises. The tints vary with the location of the plant. Where the sandy soil is rich, and the plant in the midst of abundant food is healthy and luxuriant, the flower buds are of a pale pink, as in our picture. Where the soil is poor, or where the plant has in some way had a struggle for life, the little buds have a reddish shade. The lover of elfin stories might readily believe that the fairies had strewn these mossy banks with miniature cherries, brought from the mystic regions where fairies are at home. No one, though familiar with the brightest flowers of city gardens, could fail to enjoy such a trip as described. It takes such an experience to fully appreciate the well-known lines of Wordsworth:—

"Nature never did betray
The heart that loved her; 'tis her privilege
Through all the years of this our life, to lead
From joy to joy; for she can so inform
The mind that is within us, so impress
With quietness and beauty, and so feed
With lofty thoughts, that neither evil tongues,

Rash judgments, nor the sneers of selfish men,
Shall e'er prevail against us, or disturb
Our cheerful faith, that all which we behold
Is full of blessings."

It is remarkable that a plant so abundant in the Pine Barrens of New Jersey, and within a score of miles of Philadelphia, which at the close of the last century was the great centre of botanical explorers, should seem to have been wholly overlooked by them, and that it should be left to the lynx-eyed Andre Michaux (not F. A. Michaux, as the Century Dictionary states) to discover it, for the first time, in North Carolina, during his famous trip through that region at the incoming of the present century. In these mountains, it does not seem to be very abundant, but is scattered here and there over widely-separated sections. The plants, in these several sections, do not appear to ever have had any close relationship, while the configuration of the earth's surface is there as it is now. As the original home of the plant seems to be near the sea level, its existence in these high regions favor the hypothesis that the mountains of North Carolina have been elevated in comparatively modern times, and that these, and other plants now almost confined to the barren sands of New Jersey, were elevated with them

It is further remarkable that the genus, *Pyxidanthera*, has no very close relationship with other genera of plants now existing, its closest affinity being with *Diapensia*. *Diapensia Lapponica*, an arctic plant, is found on the White Mountains in small quantities, and it probably came down with the ice which once covered what is now the peak of this mountain, as proved by Prof. Hitchcock, who, with the writer of this, once found arctic boulders there. Some of the botanists of Michaux's time, indeed, insisted in classing our plant with the arctic *Diapensia*. Richard Anthony Salisbury, in a work called *Paradisus Londinensis*, and which appeared after Michaux had given the plant the name of *Pyxidanthera*, remanded it to the older genus as *Diapensia cuneifolia*, under which name it still occasionally appears in botanical works.

Our own Elliott, who, in 1816, issued "Sketches of the Botany of South Carolina and Georgia," regarded it as not distinct from *Diapensia*, and it appears there as *Diapensia barbulata*, thus giving credit to Michaux's specific name. Two years later, Nuttall issued his "Genera of North American Plants," and, for the first time, Michaux's acuteness was recognized. Nuttall writes of it as *Diapensia barbulata*, and says, "that Michaux's creation of the new genus, *Pyxidanthera*, for this species, should 'probably' be accepted,"—and it has been generally accepted, since Michaux based the distinction from *Diapensia* on the singular manner in which the anther opens, as if with a lid,—*Anthera pyxidis instar transverse dehiscens*,—and this has been held to be a valid distinction. The name is derived from this circumstance. "*Pyxis*," says the Century Dictionary, "in ancient Greek and archæology, is a type of cylindrical vase or box with a cover, used especially by women, as for the toilet;" and *Anthera*, of course, refering to the anther. This is well shown in Fig. 2, of the plate,—and better in the enlarged side view in Fig. 3. The specific name refers to the hairy or slightly bearded base of the leaves and young shoots, but which is a character subject to more or less variation.

In these days, when the genesis of species commands close attention, there is much difference of opinion as to the nearest relatives of this singular plant. Its association with *Diapensia* is undoubted, and the two together make a section known as *Diapensieæ*. But whether this section is to be placed near *Polemoniaceæ*, or some other natural order, is where the difference of opinion arises. Even the best botanists change their own opinions from time to time. Lindley, in the "Vegetable Kingdom" cited, places it near *Loganiaceæ*, and indirectly with *Hydrophyllaceæ*. Dr. Asa Gray, in his earlier work, made *Diapensieæ* but a sub-section of *Polemoniaceæ;* but in the "Synoptical Flora," from which our description is taken, he gives *Diapensiaceæ* full rank as a natural order, taking in *Shortia* and *Galax*, with *Diapensia* and *Pyxidanthera*, and places the order in close alliance with *Statice* and *Plumbago*. Plants often give hints as to their relationships by abnormal growths. These should be studied, in this case, by those interested in the derivation of species. What are often called monstrosities, are often keys to the plan on which the plants are formed.

EXPLANATION OF THE PLATE.—1. Plant from the Pine Barrens of New Jersey, gathered April 5th. 2. Front and side views of highly magnified stamens. 3. Stamen magnified 250 times, with a side view of the box and lid-like anther. 4. A leaf considerably magnified.

WILD FLOWERS AND NATURE.

THE PERFUME-LADEN BREEZE.

"Come gentle air! and while the thickets bloom,
Convey the Jasmine's breath divine;
Convey the Woodbine's rich perfume,
Nor spare the sweet-leaved Eglantine."

—SHENSTONE.

RHYTHMIC GROWTH IN PLANTS.—Mr. Egan notes: "In reference to the intervals between the rhythmic growths, as observed in the pendulous flower of the lily assuming an erect position on the secondary efforts, reminds me that the drooping flowers of the *Yucca filamentosa* pass thro' the same change, the seed vessels standing upright upon the side-arms of the stalk, like sailors on the yard-arms on dress parade."

COLOR AND PRODUCTIVENESS.—Hugh Miller, in his "My Schools and Schoolmasters" (pages 266-268), says: "For about six weeks [at Gairloch], we had magnificent weather—clear, sunny skies and calm seas; and I greatly enjoyed my evening rambles amid the hills, or along the sea-shore. I was struck, in these walks, by the amazing abundance of wild flowers which covered the natural meadows and lower hill slopes—an abundance, as I have since remarked, equally characteristic of both the northern and western islands of Scotland. The lower slopes of Gairloch, of western Sutherland, of Orkney, and of the northern Hebrides generally,—though, for the purposes of the agriculturist, vegetation languishes, and wheat is never reared,—are by many degrees richer in wild flowers than the fat, loamy meadows of England. They resemble gaudy pieces of carpeting, as abundant in petals as in leaves. Little of the rare is to be detected in these meadows, save, perhaps, that in those of western Sutherland, a few Alpine plants may be found, at a greatly lower level than elsewhere in Britain; but the vast profusion of blossoms borne by species common to almost every other part of the kingdom, imparts to them an apparently novel character. We may detect, I am inclined to think, in this singular floral profusion, the operation of a law not less influential in the animal than in the vegetable world, which when hardship presses upon the life of the individual shrub or quadruped, so as to threaten its vitality, renders it fruitful in behalf of its species. I have seen the principle strikingly exemplified in the common tobacco plant, when reared in a northern country in the open air. Year after year it continued to degenerate, and to exhibit a smaller leaf and shorter stem, until the successors of what, in the first year of trial, had been vigorous plants of some three or four feet in height, had, in the sixth or eighth, become mere weeds of scarcely as many inches. But while the as yet undegenerate plant had merely borne atop a few florets, which produce a small quantity of exceedingly minute seeds, the stunted weed, its descendant, was so thickly covered over in its season with its pale yellow bells, as to present the appearance of a nosegay; and the seeds produced were not only bulkier in the mass, but also individually of much greater size. The tobacco had grown productive in proportion as it had degenerated. In the common scurvey-grass, too,—remarkable, with some other plants, for taking its place among both the productions of our Alpine heights and of our sea-shores,—it will be found that, in proportion as its habitat proves ungenial, and its leaves and stems become dwarfish and thin, its little white cruciform flowers increase till, in localities where it barely exists, as if on the edge of extinction, we find the entire plant forming a dense bundle of seed-vessels, each charged to the full with seed. And in the gay meadows of Gairloch and Orkney, crowded with a vegetation that approaches its northern limit of production, we detect what seems to be the same principle chronically operative; and hence, it would seem, their extraordinary gaiety. Their richly-blossoming plants are the poor productive *Irish* of the vegetable world; for Doubleday seems to be quite in the right in holding, that the law extends to not only the inferior animals, but to our own species also.

The lean, ill-fed sow and rabbit rear, it has been long known, a greatly more numerous progeny than the same animals when well cared for and fat; and every horse and cattle breeder knows that to over-feed his animals proves a sure mode of rendering them sterile. The sheep, if tolerably well pastured, brings forth only a single lamb at a birth; but, if half starved and lean, the chances are that it may bring forth two or three. And so it is, also, with the greatly higher human race. Place them in circumstances of degradation and hardship so extreme as almost to threaten their existence as individuals, and they increase, as if in behalf of the species, with a rapidity without precedent in circumstances of greater comfort. The aristocratic families of a country are continually running out; and it requires frequent creations to keep up the House of Lords; whereas, our poorer people seem increasing in more than the arithmetic ratio. In Syke, though fully two-thirds of the population emigrated early in the latter half of the last century, a single generation had scarce passed ere the gap was completely filled; and miserable Ireland as it existed ere the famine, would have been of itself sufficient had the human family no other breeding-place, to people, in a few ages, the world. Here, too, in close neighborhood with the flower-covered meadows, were there miserable cottages that were swarming with children,—cottages in which formerly the half of every twelvemonth, the cereals were unknown as food, and whose over-toiled female inmates did all the domestic work, and more than half the work of the little fields outside."

Has this law been noted in the vegetable kingdom by other observers?

FRANK N. TILLINGHAST.

Greenport, N. Y.

A number of questions, with little relation to each other, are confused in Hugh Miller's mind. Although life and nutrition are co-related in the animal and vegetable kingdoms, the manifestation is, in most cases, subject to different influences. So far as plants are concerned, fertility is well known to be co-related with the struggle for life. Root-pruning, grafting vigorous growers on dwarfing stocks, ringing the bark, transplanting, are among the illustrations. Bright colors are also co-related with the same struggle both in leaves and flowers. It is through fighting against cold, and with failing aid from nutrition, that leaves color in the fall,—and from the severe struggle with soil and climate that Alpine flowers are so pretty. It has *not* been found the rule that sterility is more constitutional with the rich than with the poor, even though there may seem a difference in the average number in the families; though perhaps red cheeks and blue noses may be aided by a struggle with Old Boreas, as an Alpine plant would have to do. But the comparison would probably have to end at about this point.

LILIUM SUPERBUM. — The illustration of *Lilium superbum*, in the January number of the MONTHLY, is, I think, the best that has appeared, so far. The description of *L. s.* var. *Carolinianum* agrees with a number of specimens I found, a number of years ago, in a swamp back of Hunting Park, in Nicetown, Philadelphia, none of which ever grew over four feet high in the three years I visited the locality, and the flowers did not recurve nearly as much as the specimens found in other localities; and I considered it, at the time, an intermediate form of *L. superbum* and *Canadense*. The place has since been built upon, and all the botanical treasures have disappeared.

The remarks, in a former number, in reference to the rotation of hard woods and pine on cleared land, bear on the subject of the *L. superbum*. I have noticed, in my rambles in woods of over 20 feet high, large numbers of lily plants, from 6 to 18 inches in length and very weak in the stem, not an eighth of an inch in diameter, which never flower in the shade; but when the woods are cut off for a few years the place is ablaze with lilies, in August, which are gradually smothered as the new growth of trees shut out the sun and light, till they are finally reduced to the weak condition again. GEO. REDLES, JR.

Germantown, Pa.

LEAF VARIATION.—The varying forms of leaves on the same plant always attract the attention of the curious. On the mulberry and others some leaves will be quite entire; others are deeply lobed. In none of our text-books does there seem to be any explanation of this.

From what we read in elementary works, one might almost believe that the tree first

formed the nerves of the leaves, as if a sort of skeleton frame, and then spread the green matter of the leaves over it. But it would seem that these veins are to support the leaf,—that is to say, to give strength to it. If this be granted, the leaves will not make veins or ribs when it has no green blade that needs this strengthening.

When, therefore, there is a low degree of vital-energy, and not much leaf-blade material formed, there would be no need of these supporting ribs. May we not, therefore, say that it is from some local weakness in not producing material to warrant the production of leaf-blade, that accounts for the absence of the ribs, and which then results necessarily in a lobe where, otherwise, the leaf would be entire?

LESTER BERNSTEIN.

Philadelphia.

CALIFORNIA'S EMBLEM.

Golden-hued eschscholtzia, fair,
Blooming on the hillsides, where
The breezes softly kiss thy velvet cheek;
In thy dress of molten gold,
Gazing on thee, we behold
Jeweled rosaries, heaven's richest treasure to the meek.

Thou art queen among them all!
E'en the sturdy sunflower, tall,
Bends to thee his sunny, beaming face;
Wrought in gold, and jewelled tipped,
Sunny heart, and smiling lipped,
Thine willingly, we kneel before thy grace.

In thy gold and amber dye,
Nodding midst wild wheat and rye,
Thou dost wave above a carpet green;
Heaven's cup distills, the dew,
Each day, jewels, bright and new,
Nestle round thy stem, and brightly gleam.

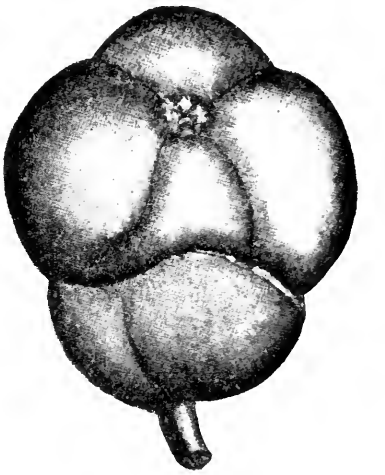
Light, dancing in the summer air,
The skies are blue; the world is fair;
Thy home, the broad and boundless realm of space;
The hills, thy beautiful palace hall;
Thy friends, the lofty trees so tall;
And hill and dale alike, thy fit abiding place.

Ah, yes, to us thou art doubly dear;
California's fields thy native sphere;
The "Golden State;" the garden of the West;
Sunny-born eschscholtzia, fair,
Nodding here, and waving there,
Of all, *thou* art the one we love the best.

—R. JOHNSON.

BLACK WALNUT VARIATION.—In the preliminary report of the Pennsylvania Commissioner of Forestry for 1896, Dr. Rothrock figures and describes a Black Walnut, growing near Pleasant View Postoffice, in Juniata County, which occasionally bears fruit with a four-parted husk, as we find in the walnuts' close neighbor, the hickory, instead of the single, undivided husk that a well-behaved walnut should always wear.

It may be remarked that the outer husk of the walnut is primordially of four parts, as in the hickories, as may be inferred from the fact that in the flower the calyx is four-cleft both in *Juglans* and in *Carya*. The husk of the walnut is, therefore, but a four-cleft involucre that has become perfectly consolidated. Knowing, in these days, that these consolidations and separations result from slight variations in growth-energy, it is remarkable that we do not more frequently see these illustrations of the



close relationship between *Juglans* and *Carya*. In the hickories, however, we often see cases where the four-cleft involucre of the *Carya*, as it should be, has assumed the indehiscent husk of the walnut or *Juglans*. The Pignut, *Carya glabra*, often has trees with the husk indehiscent, as if of the walnut family.

In the case presented by Prof. Rothrock, we have the same behavior as we find in the Navel Orange. The arrestation of longitudinal growth, that occurs when nature undertakes to produce flower and fruit, was not quite complete on the first effort, a second and, of course, weaker effort was attempted, with the results noted. We may conclude from these facts that it takes a greater degree of life-energy to produce the husk of a walnut than the husk of the hickory.

GENERAL GARDENING.

THE SPRING DANDELION.

My childhood's earliest thoughts are linked with thee;
The sight of thee calls back the Robin's song,
Who, from the dark old tree
Beside the door sang clearly all day long,
And I secure in childish piety,
Listened as I heard an angel sing
With news from heaven, which he could bring
Fresh every day to my untainted ears,
When birds and flowers and I were happy peers.

—LOWELL.

GARDENING IN CALIFORNIA.—

"Consider the lilies of the field, how they grow; they toil not, neither do they spin: and yet I say unto you, that even Solomon in all his glory was not arrayed like one of these."

In exploring the flora of the Pacific Slope, both natural and acclimated, one enters a field of unchallenged delight—a veritable wonderland, where nature scorns brevity or restriction. From the fir-clad peaks of the Sierra to Palm Valley in the South, the shifting sea sands at the West and the somber forests of the North, Flora is regnant the year round, changing her court from mountain to plain, and her vestments from brown to green and gold and blue, at the season's behest.

So vast is California and so diversified in contour, that the investigator finds, in truth, a never-ending springtime and a congenial place for nearly every plant and tree that grows upon the earth.

While the great mountains, with their storm-swept crests, are wrapt in silent whiteness, the warm rains are clothing the hills and valleys of the southern counties with green and gold, vivifying all nature. Quickly the green mantle spreads northward; then up the mountain sides this glorious spring chases the melting snows, leaving a trail of beauty in its wake. While far down in the valleys the harvest has been gathered and the hills have been browned by midsummer heat, we pluck spring's daintiest floral offerings from the shadow of the snow banks upon Mt. Shasta's brow.

California's flora can only be summarized in so brief a space as this, but a glimpse here and there of its beauties may inspire the reader to observe more closely the wonderful possibilities of nature in this favored country.

Beginning with the alkali plains which seem so dreary and desolate to the casual traveler, the plant lover finds much of interest. There are the giant cacti, lifting their straight, stiff bodies high into the air, crowned in season with snowy flowers; thousands of acres of opuntias, their thick, prickly leaves studded with gaudy yellow and purple blossoms; stately *Yucca brevifolia*, with curious, tufted branches, and the more humble but still beautiful *Yucca Whipplei*, with the great spikes of creamy flowers. For a few brief days, when the ground is moist, these desert wastes are bright with annuals, which ripen and sow their seeds and disappear as completely as if they had never existed. Even a chaste, white lily rises from the bare sand, as if to show that nature's precious gifts are not all bestowed upon the goodly lands.

On the sand dunes by the sea we find a rich flora battling for a foothold in the uncertain earth. Great, white and yellow lupins, dainty blue iris, sea pinks, strawberries, brodiæas, sand apples, echeverias, asters, alliums, and a host of other plants and shrubs carpet the sand hills, making common cause with the willows and scrub oaks.

At Monterey the pine forest sweeps down to the water's edge, but for the most part the immediate coast line is quite devoid of forest.

In the low coast mountains the flora is rich beyond brief mention. This is the home of the majestic redwood, beneath whose lofty, somber branches, in the subdued light, grow the trilliums, yellow iris, oxalis, white violets, and thrifty ferns. The Live Oaks are luxuriant, and the great, gaunt madronos lift their glossy heads. Manzanitas, with their smooth but knotted and twisted stems, and exquisite flowers, choke the forest spaces; lilacs (*Ceanothus*) in lavender, white, and blue, lend softness to the greenery. Christmas berries

(*Heteromeles arbutifolia*) give gaiety in the winter, and honeysuckles, clematis, wild peas, and roses fight for position and light.

In localities, great clumps of tawny-blossomed azaleas lend their charm. Calycanthus, dogwoods, wild plums, maples, and buckeyes are scattered along the streams.

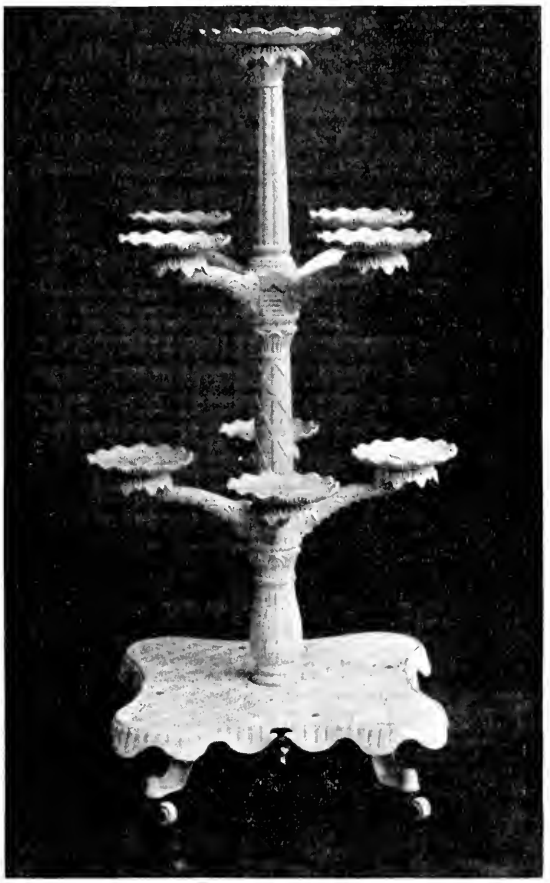
Beneath the shrubs, and in open spots, larkspurs, blue and white lupins, star tulips (*Calochortus*), brodiæas, gold-back ferns, yerba buena, strawberries, gooseberries, thimbleberries, orchids (*Cypripedium montanum*), columbines, and hundreds of less familiar flowers find shelter.

In the shady cañons, in safe retreat, are nestled shade and water-loving plants. Mosses and Maidenhair Ferns cling to every projection; lilies and broad-leaved plants bathe their roots in the water, while giant ferns, five or six feet high, lend dignity and elegance.

Out in the rich valleys and upon the sloping hills nature has made her great color show. Here is the home of the famous California poppy (*Eschscholtzia*.) The eye can drink from these myriad yellow cups a brilliant beauty peculiar to this State. Thousands—yes, tens of thousands—of acres of golden glory enrobe the State in early spring, a few blossoms lingering like flickering candles till the season comes again.

In certain sections baby-blue-eyes (*Nemophila*) claim the ground; in others, yellow violets, godetias, or sunflowers have won the battle. Summer ushers in the lupins, with stately spikes of yellow, blue, white, or purple blossoms, and from the mountain tops to the sea they claim every congenial nook.

In the southern counties there are the scarlet larkspur, six feet high, and the magnificent *Romneya Coulteri* with glaucous leaves and great creamy white flowers, the gorgeous "glory pea" (*Lathyrus splendens*), and many less showy plants.



ORNAMENTAL PLANT-STANDS.—SEE PAGE 40.

In the foothills of the Sierra many interesting trees and plants are found. As one climbs higher, columbines, saxifragas, fritillarias, iris, and calochortus grow profusely. Red and white lilies lift their chaste blossoms above the banks of the streams, and goldenrods light up the rocky niches or cluster about dripping springs. Wild lilacs, azaleas, and dogwoods are met with more frequently. Moss-cupped oaks and some firs of exceeding beauty become plentiful. Wild cherries, plums, chinquapins, gooseberries, etc., grow in thickets. Pitcher plants are tucked away in cool bogs; and little lakes and pools are fringed with glowing colors.

Now the Sugar Pines, ten feet in diameter, and the great *Sequoia gigantea* lift their plumed heads hundreds of feet towards the sky, mute sentinels of the forests, the mightiest of living trees. Nations have arisen and fallen, but they live on, apparently regardless of the lapse of time, save in the occasional dropping of a storm-tossed or lightning-smitten branch. On up the peaks to the verge of eternal snow Flora has carried her gifts, and the sparkling crimson snow flower (*Sarcodes sanguinea*) pushes up its beautiful crystalline form from

the frozen ground as the snow recedes in summer.

California's adopted flora is almost as bewildering in its profusion as that which nature had given her. I have in mind a private garden which has within its restricted space 3,000 kinds of trees and plants, all growing thriftily.

Nearly all of the Eastern and foreign shade and ornamental trees are found in plenty, some sorts, like the *Eucalyptus Globulus*, or Blue Gum of Australia, being conspicuous objects throughout the State. Old-fashioned shrubs, such as lilacs, mock-oranges, spiræas, snowballs, Sweet Shrub, etc., are perfectly at home, and pæonies, chrysanthemums, foxgloves, zinnias, marigolds, dahlias, narcissus and verbenas are as common as in Eastern gardens. Indeed they are sometimes so improved by the climate and soil that old friends scarcely recognize them.

Roses are the pride of Californian gardens, scrambling over fences and cottages, crowding each other for room, and sometimes climbing fifty feet to the tops of trees, they are, when at their best in spring and fall, worth a journey across the continent to see.

San Francisco has been called the "Fuchsia City" on account of the luxuriant growth attained there by this graceful flower. The humblest porches and windows are draped with the coral bells. The fuchsia and its companions, heliotrope, nasturtium, and marguerite, find a place in nearly every yard. Dræcenas and palms are frequent in San Francisco, as they are indeed in nearly all of California. Tree ferns are also occasionally seen. Street trees are not generally planted in the city, the climate being equable and cool, and the sunshine being preferable to the shade. Nearly every city, town, and village in the State to unaccustomed eyes seems a veritable flower garden.

Palms, agaves, yuccas, bamboos, and acacias grow luxuriantly nearly everywhere. Geraniums and pelargoniums run riot, the latter at Santa Cruz reaching a height of six or seven feet, and Rose Geraniums are frequently met with more than eight feet in diameter. Bananas are grown only for ornament, the climate being too dry and the nights too cool to successfully produce fruit in quantity. Violets are grown by the acre in the neighborhood of San Francisco and Menlo Park; and carnations are grown as a field crop in the neighborhood of Los Angeles, the flowers being cut by the million. Sweet peas are produced by hundreds of acres in the Santa Clara Valley, and the seed shipped to all parts of the world.

Lawns are somewhat more difficult to manage in California than in the East, but with a little care a green sod can be had the year round. California has naturally but few trees or shrubs which furnish richly-tinted leaves in autumn; but the Sugar Maple, the Sweet and Sour Gums, the sumacs, etc., which make brilliant the Eastern landscape in the fall season, thrive without special care in nearly all parts of the State, when planted, and the coloring of their foliage is even more brilliant here than in their native habitat. EMORY E. SMITH.

PLANT-STANDS.—Plant-stands may be pretty; usually they are the reverse. The one illustrated on page 39, is a good example of what can be pleasantly done. Straight lines and curves harmoniously blend, and form an attractive whole. It is made of cast iron, which would at first be thought an objection because of weight; but as it is furnished with castors, that difficulty is at once overcome. It will also be noticed that there is a small spigot, at the bottom, which is an outlet for any surplus water that may be collected through the arms. It is reproduced from a photo sent by J. B. Geyser, Allegheny, Pa.

WINTER CRUSADE AGAINST THE BAG-WORM.—In previous issues, MEEHANS' MONTHLY has discussed very thoroughly the problem of getting rid of the Bag-worm, the well-known pest that infests chiefly the arbor-vitæ, and is so destructive to the foliage. Hand-picking was urged as most surely effective where the size of the tree permits; but mention was not made of the possibility of winter work in this direction. As a fact, this is one of the best seasons to commence or continue the work of their destruction. The curiously-constructed cocoon or "bag" is readily recognized and secured as it hangs fastened, usually on the upper branches. Many of these cocoons contain merely the remains of worms that have given up their brief lives in the homes that have been their protectors from the beginning; but others contain tiny eggs which are to eventually be the cause of great annoyance to the owner of neighboring trees, and it is the

capture of these cocoons that is to be the salvation of the trees. The natural course is next to burn them, though it has been well suggested that in this way certain parasites that are enemies of the Bag-worm are also destroyed, while, if the "bags" be thrown in a heap in a cleared space at some distance from trees, the parasites may escape, while the young larvæ cannot.

the pleasurable sensations mere beauty excites, is the lessons flower-culture teaches us. In this case, we find nature telling us of the enormous mechanical strength plants possess. Mushrooms have been known to lift paving-stones of many pounds weight, and roots have over-toppled stout stone walls. Here, the roots have lifted the whole plant above the ground. This is often seen in palms and

STRIPE-LEAVED SCREW PINE.

THE SCREW-PINE.—The plants of the genera *Pandanus*, *Dracæna*, *Cordyline*, are among the most valuable we have for parlor and conservatory decoration, as they will do well in partial shade. The beautiful specimen here represented is from a photograph kindly furnished by Mr. Jos. H. Borton, of The Hotel Dennis, Atlantic City, N. J. The white variegation has nearly run out.

One great pleasure in gardening, aside from

other plants of the same character as this Screw Pine. Pushing down into the earth, the whole plant is lifted, and this, too, without a kink or bend in the straight roots. They are veritable Samsons with gates of Gaza on their backs. A great practical lesson is taught here. The trunk of a tree cannot elongate after being once formed; but the whole tree may be somewhat lifted by the pressure of roots against rocks.

The surroundings of the specimen that is illustrated are so admirably arranged that a view of it in its natural state leaves a lasting impression on one's mind. That the full scene could not be satisfactorily transferred to these pages, is to be regretted. The jardiniere, seen in the illustration, is of a dark purple glass that reveals different shades of color as the light strikes it. The whole is mounted on a pedestal of the same kind of glass, reaching a probable height of seven feet,—the specimen being a large, vigorous one,—and is in graceful proportion with the drawing-room in which it is placed and where it can be seen from other rooms through the large door-way. One cannot doubt its extreme value as a house plant after seeing this beautiful, thriving specimen.

NEW OR RARE PLANTS.

THE HOP HORNBEAM OR IRONWOOD.—Mr. H. P. Bigelow, Waterville, N. Y., calls attention to the desirability of the Ironwood, *Ostrya Virginica*, as a small shade tree. It certainly has been left in unmerited obscurity by cultivators. In a wild state, as usually seen, it is about 20 or 30 feet in height; but cultivated specimens often attain greater dimensions.

EXPERIENCE WITH NEW AND RARE PLANTS.—New varieties of plants are frequently presented to the public in full faith that their future is assured. But reared under the most favorable conditions and unusual care, the promises are not always fulfilled. When these surroundings are changed most frequently the poor plant is unmercilessly condemned; but allowances should be made. Those who test new plants should freely give of their experience, and in many cases obstacles will be removed and the meritorious given its proper standing.

MEEHANS' MONTHLY freely offers its pages, as far as practicable, to the discussion of new plants, and it is hoped that those who can will step forward even in a small way. Not only those plants that are new, but, as this department suggests, those that are rare in general cultivation may be treated.

CENTROPOGON LUCYANUS. — *Centropogon Lucyanus* is a beautiful garden hybrid, raised by Mr. Desponds, of Marseilles, France, in 1856, and is a cross between *C. fastuosus* and *Siphocampylos betulæfolius*. It is one of the most effective plants, for greenhouse decoration, we have. It is herbaceous in character, producing, from the root-stock, stems from one to two feet in length. They at first make an upright growth, and gradually arch outwards when maturing. The leaves are alternate, ovate lanceolate, and shining, olive green. When the stems bend outwardly, the footstalks turn their leaf surface to the light. This arrangement is very effective, when we come to consider its infloresence. The stems are terminated by short corymbs of short-stemmed, tubular, arching flowers, two inches long, of bright vermillion; and these are covered with short hairs which glisten in the sunshine. In the bud state, the upper segments of the corolla overlap the anthers and stigma, coming to a point and resembling very much a parrot's beak. The incisions of the corolla are irregular, which, together with the united stamens, black hairy anthers and clavate stigma, show, at once, its affinity to *Lobelia*, and to *Campanulaceæ*. The terminal corymbs are succeeded by shorter and smaller ones developing backwards along the stem. Small plants admit of a most effective arrangement with foliage plants, as they can be grouped so as to show the flowers, at the same time hiding the pots. It is easily increased by cuttings, and may be planted outdoors for the summer. T. D. HATFIELD.

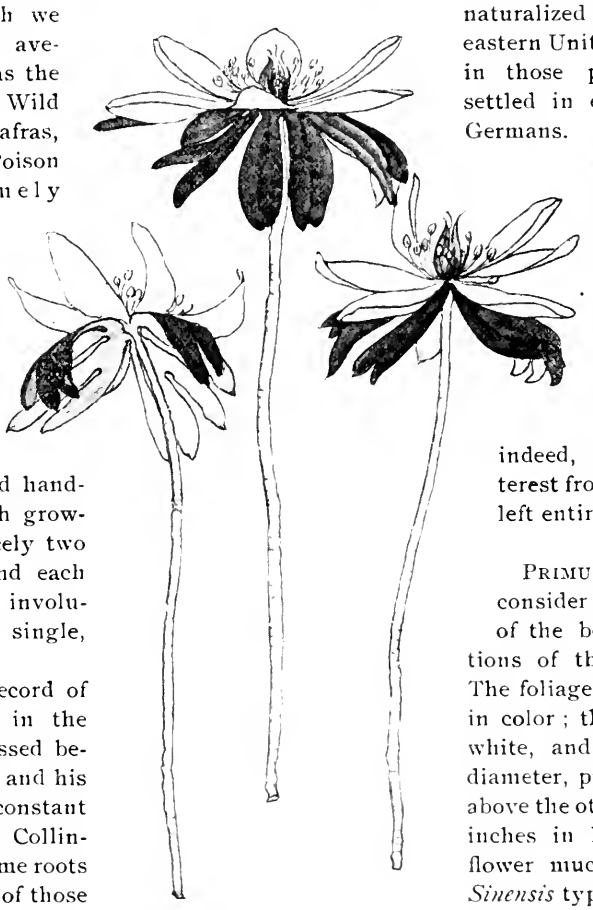
It may be added for the benefit of those who are not familiar with the genus *Centropogon*, that a good idea may be formed of it from our native Cardinal Flower, *Lobelia splendens*, to which the plant is closely allied.

THE HARDY FLOWER GARDEN.

THE WINTER ACONITE.—The Winter Aconite, or Winter Hellebore, was early placed among the hellebores by Linnæus; but it was later assigned to a new genus by Salisbury, and called *Eranthis hyemalis*, or, literally, "Winter Spring-flower." The plant is dwarf and, like many Alpine species, bears a flower very large in proportion to the size of the herbaceous part. The yellow buds are quite globular, but spread in full blow, becoming much flatter. The scape springs from a single, fleshy root-stock which sends up independent root-leaves later in the season. The juices

are acrid and poisonous, and possess medicinal properties similar to those of the hellebores. The plant is indigenous in the sub-Alpine forests of Westphalia, of Tyrol, and is occasional in Switzerland, and blooms in winter or earliest spring, while the snow is still on the ground. It has been naturalized in English and other European parks, and has seemed to find a congenial home in America at Bartram's Garden and Haddington, Philadelphia, and Media, Pa.

March 8th, 1897, I received word that the Winter Aconite was blooming at Bartram's Garden, and I straightway started forth with a friend to see it. We stopped the trolley at the Old Road, which we preferred to the new avenues, lined by time as the old path was by Wild Cherry shrubs, Sassafras, and berry vines and Poison Ivy, all picturesquely blackened by the city smoke. We had scarcely entered the bounds of the garden when we saw brilliant yellow patches of flowers spread upon the northwestern slopes,—solitary flowers like large and handsome buttercups, each growing on a stem scarcely two inches in height, and each resting on a ruff-like involucre consisting of a single, deeply cut leaf.



WINTER ACONITE.
ERANTHIS HYEMALIS, (L.) SALISB.
Drawing by Miss Williams.

I seem to see no record of the Winter Aconite in the many letters that passed between John Bartram and his friends; though his constant correspondent, Peter Collinson, probably sent some roots from England in one of those precious packages, which were placed in the hands of certain sympathetic sea-captains to deliver to Friend Bartram in the New World, while these states were yet colonies.

Here, in this new soil, the roots have lived and spread and faithfully borne their splendid flowers and horns of fruit till now, to do our pioneer naturalist honor, and to delight the eyes of those who venture forth in the uncertain days when the black-bird and the snow-bank may be seen at one glance across the fields.

NEWLIN WILLIAMS.

Philadelphia.

THE GRAPE HYACINTH.—The Grape Hyacinth is known botanically as *Muscari botryoides*, and is one of the prettiest wild flowers of Greece and the Holy Land. It is a round bulb, a little larger than a small tulip. It is often known as Blue Bottle. It has become naturalized in many parts of the eastern United States, especially in those portions that were settled in early times by the Germans. It is a great favorite with flower-hunting children in early spring, and well deserving of cultivation in localities where it has not already been found growing wild. It has the faculty of taking care of itself, and, indeed, adding to itself interest from year to year, when left entirely alone.

PRIMULA STELLATA. — I consider *Primula stellata* one of the best recent introductions of the primrose family. The foliage is very dark purple in color; the flowers are pure white, and about one inch in diameter, produced on tiers one above the other, reaching over 20 inches in height. The plants flower much longer than the *Sinensis* type. The seed should be sown in April, in light soil, to get good-sized plants, and given a little more sun than is usual for *sinensis*. It is a gem among Chinese primroses.

JNO. THATCHER.

Wynnewood, Pa.

FRUITS AND VEGETABLES.

DEEP SOIL IN GARDENING.—A wise gardener, who was very successful with his gardens, occupied an acre of ground. But when conversing about his garden, he used to inform questioners that he cultivated two acres. This was to his newer friends. But this he did to explain that, instead of digging up the ground some five or six inches deep, as most cultivators do, he stirred it up to a foot or more,—having one of his acres beneath the other. This piece of wisdom is, however, not generally perceived. Double the crops can certainly be obtained from ground loosened in this manner. But this is not understood by the ordinary cultivator. Those who are engaged in the culture of the beet, especially, know that land is always doubled in value when sub-soiled,—that is to say, when the under surface is deeply loosened. It is now well understood that a pulverized soil will hold air and moisture, so necessary to successful culture, to a much greater extent than earth that is packed solid, so that air and moisture cannot be retained. In the dryer weather, plants will not grow and flourish when under ordinary shallow culture. The plants struggle along and appear tired of life. We know of a gardener who digs up or loosens a small tract of land to the depth of nearly two feet, on which, in August, he plants bush beans. He has fine products in September. The beans become very surely "Snap-Shorts," as they are technically called, breaking like a fine piece of glass, and without the slightest sign of stringiness. He is the envy of all other growers who are jealous of the high return this crop brings him; but all are too slow to take up the method by which these great results are accomplished.

FIRE BLIGHT IN THE PEAR.—The conductors of MEEHANS' MONTHLY must not be aware of the wholesale destruction, by blight, (Fire Blight, as it is called by some—Pear Blight, by others) of the Le Conte Pear trees, as the article on page 14 of the very esteemed MONTHLY says: "No disease, so far, has troubled them." Yes, the pears were shipped in barrels, but it is sad to relate that trees, which yielded as much as four barrels one season, were taken off by that dreaded and, as yet, not quite explained disease the following season. All along the lower coast, where very promising orchards were growing up, and which have borne a crop or two, alas! they are no more. The blight has ruined them, and the people have the trouble to dig up these dead trees and burn them. The Keiffer seems to be more hardy and has done remarkably well, although not blight-proof either. C. FORKERT.

When it was claimed, at the introduction of these pears, that they were "blight-proof," the writer cautioned pear-growers to "wait and see." All of these diseases originate, primarily, from the presence of minute spores, which, in these minute organisms, take the place of seeds in the more highly organized plants. A new locality may not have these spores; but something happens to introduce them, and, if they find the exact food favorable to their development, they sprout, grow and spread "like wild-fire."

SECOND FLOWERING OF A WASHINGTON PEAR.—A correspondent from Andalusia, Pa., says:—"We have a Washington Pear tree that bears a full crop of pears, then sheds all foliage, followed by a production of new leaves and a few flowers, but the latter do not mature. It does the same every year."

This note is interesting from the fact that few people succeed, it is said, in getting good Washington Pears, in these days; and it is well known that it is one of the most delicious of all pears when in perfection.

In regard to the late flowering, this is the result of the early loss of the leaves. Fruit trees, that blossom normally in early spring, will always make a new growth, which involves flowering also, if the leaves are destroyed from any cause before the natural resting time arrives. In this case, the leaves fall early from the attack of a minute fungus. It is known, to pear growers, as the leaf-blight. If the trees were sprayed with copper solutions, about mid-summer, the leaves would be saved. Every garden should have a spraying machine.

RUSSIAN APPLES.—As a rule, the Russian apples are not of high quality. But Tetofsky, Duchess of Oldenburg and Red Astrachan hold their own fairly well. A somewhat recent introduction, Yellow Transparent, seems to be growing in the estimation of apple growers.

WATER-CRESS.—When the spring season is bright and sunny, as in America, Water-cress soon becomes bitter. Its best season is in the early spring months, when it first commences to grow, and before many of the leaves have spread over the surface of the water; but some have had great success in cultivating it in boxes. Though it is usually found in water, it grows fairly well out of it, and a box of Water-cress growing in a comparatively shady place is devoid of a hot, peppery character, which, even when the plant is grown in water, it sometimes acquires, as already noted.

RHUBARB.—One of the garden crops that thoroughly understands how to take care of itself is rhubarb. If planted in earth that is not very dry, it will continue for many years without receiving any particular attention. It is, however, very fond of high living, and those who desire to have large and succulent stalks should give a good top-dressing of manure every season.

LICORICE.—Could not you publish a note on the culture of Licorice, telling us whether to plant the seed or the roots, and where we can procure them, and if the hillsides or bottom land, fields or woodlands—are the proper places for them to grow in? I would like to try a crop, here, if our lands are suitable. I have always heard that it is a job to dig the roots. Also, where could I procure some of the seed of the Ramie plant? F. K. STEELE.

Festus, Mo.

So far as known to the Conductors, there has been nothing placed on record in regard to the successful culture of Licorice in the United States. Considering its national importance, it is a matter well worthy of close attention. Meehans' Nurseries made experiments, for two or three years, with roots imported from the Old World, but found the leaves to become affected by some parasitic fungus as fast as the young growth appeared. As no plant can live without healthy leaves, the Licorice plants gradually died. Only one lived to the period of three years, when that died like its fellows. A hot, dry, summer atmosphere is evidently unsuited to it; but there certainly must be some localities, in a country as large as this, where it should succeed well. There would be a fortune in its successful growth.

LICHEN CULTURE IN CHINA.—We cultivate the field mushroom; and the truffle is, in a certain sense, fostered by cultivation; but it is not generally known that some lichens are edible, and are cultivated by the Chinese. Our estimable Belgian contemporary, *La Semaine Horticole*, says that a gelatinous species, which they call "Wood-ears" (probably from some resemblance to the human ear in its form), is easily grown under favorable conditions. An oak tree is cut down, the branches trimmed off, and the trunk supported at each end, by two stones, about the height of a man. The bark is left on the trunk. As soon as the wood commences to decay, the brawny and delicious brown cryptogam appears on the surface, and is produced in considerable profusion. Many successive crops appear from trunks once placed in this position.

FERTILIZERS FOR STRAWBERRIES.—Nitrate of soda is a valuable fertilizer for strawberries and raspberries, and should be applied with powdered phosphate of lime.

This application to strawberries will sometimes treble the yield. The berries are larger in size, handsomer in color, more solid and finer in flavor. Ordinary manure will not produce such results, as it is not converted into plant food until after the demand of the fruit.

Nitrate of soda and powdered phosphate of lime are assimilated by the plant at once, and appropriated at a cost of less than ten dollars per acre, using four hundred pounds of the mixture which contains the three ingredients considered necessary to use for feeding plants: nitrogen, phosphoric acid and an alkali.

ANDREW H. WARD.

CRANBERRIES.—Cranberries are often sent as far as Manitoba, B. C., in ordinary open box-cars arriving frozen. The sides of the cases are knocked off and the berries are exposed in a solid mass, like cakes of ice, except that they are much more beautiful from their rich red color. They are chopped off exactly like ice, and the citizen of Winnipeg is so accustomed to buying his cranberries en bloc, that he doesn't mind in the least, though an Easterner would probably object to taking them in that way, thinking, in his prejudiced mind, that the berries are spoiled.—*Hartford Post*.

BIOGRAPHY AND LITERATURE.

SECRET SORROW.

Many a beauteous flower decays,
  Though we tend it e'er so much;
Something secret on it preys,
  Which no human aid can touch;
So, in many a lonely breast,
  Lies some canker-grief concealed;
That if touched, is more oppressed:
  Left unto itself—is healed.

—CHARLES SWAIN.

JOHN DICK.—On December the 29th, Mr. John Dick, the well-known nurseryman and florist, reached his 80th year. He is a fine specimen of that intellectually vigorous class of gardeners, that did honor to the profession in the last generation. Over half a century ago, the London firm of Charlwood & Co., was the main agency for the distribution of American forest seeds. Mr. Dick's botanical knowledge served them in good turn. He traveled extensively through our territory as the seed collector for that firm.

THE CHINESE SOAP TREE.—In an excerpt from my article on Chinese soap trees, in MEEHANS' MONTHLY for September, p. 180, I noticed that the name of the above trees is incorrectly given as *Gleditschia Chinensis*. As I have not seen the original article, as published in the *American Druggist*, I send this note in case the error may have appeared therein also. *Gymnocladus* is one of those genera which are remarkable as having a Chinese as well as an American species; and Britton, in his "Illustrated Flora," vol. ii., p. 260, is incorrect in the statement that it is monotypic and confined to North America. The American species, *Gymnocladus dioica*, Koch, is popularly known as the Kentucky Coffee-tree, because it is reputed that its seeds were used by the early settlers in that State as a substitute for coffee. This seems very remarkable, considering that the Chinese species has seeds full of saponin, which render them, of course, unfit for human consumption. The bark of the American tree, it is said, contains saponin; and it would be of interest to know for certain if the seeds are really devoid of that substance, and if they were actually used as food.

The occurrence in such widely distant areas as China and United States of small genera characterized by two, or, at most, three or four species, confined to these regions and divided between them, is a very remarkable phenomenon, and deserves to be treated afresh, in view of the many discoveries of new plants in China during the last ten years. I may mention as examples, *Hamamelis*, *Chionanthus*, *Decumaria* (this genus is also incorrectly stated to be confined to North America, in Britton, *loc. cit.*, p. 185), *Jeffersonia*, *Podophyllum*, *Diphylleia*, *Cladrastis*, *Pachysandra*, etc.

AUGUSTINE HENRY.
In *American Druggist.*

Mengtse, Yunnan.

The error referred to could scarcely have been made by MEEHANS' MONTHLY; but the last lines in the sentence in the article referred to: "the pods are much thicker than those of a *Gleditschia*," should have warned the proof-reader that something was wrong in the article copied, and to which full credit was given.

PROF. J. C. ARTHUR.—Prof. J. C. Arthur, Agricultural Experiment Station, Lafayette, Indiana, is anxious to secure a copy of his earliest paper, "Flora of Floyd Co."

WM. MCMILLAN.—The Parks of Buffalo have lost an able Superintendent by the resignation of Mr. Wm. McMillan. The fame and reputation which this gentleman's good work has given to Buffalo, fairly entitle him to a memorial in some permanent shape, to be erected there.

BARON VON MUELLER.—A memorial to the late Baron Ferdinand Von Mueller, the world-renowned botanist of Australia, is being started in that country. His benefactions were not confined to his own country, and subscriptions are expected from every quarter of the world.

WISTARIA OR WISTERIA.—A correspondent from Hampton Falls, N. H., says: "I am moved to plead for a restoration of the spelling of *Wistaria* to *Wisteria*.

Of course we all know that the Chinese variety was named for Dr. Caspar Wistar; but Nuttall, the discoverer, as you will find in his Botany, published in 1818, Vol. 1, page 115, spells it with the *e*.

I have been looking into this matter a little of late, but fail to find exactly what date this change of spelling took place. Charles McIntosh spells it with an *e* in his book on the Greenhouse, published in 1847, and changes it to an *a* in 1853. This is an English publication. The change in this country was made arbitrarily by Gray at the solicitation of John Jay Smith, I believe; but the reason either had for so doing does not appear.

Most of the above facts I have through a member of the Wister family, who got them from Mr. Wm. Wynne Wister, of Germantown.

I cannot bear to think that publications of such wide repute as yours should perpetuate an error of this sort,—for error it certainly is. I never heard any Philadelphian pronounce it other than *Wisteria*; did you? I do not believe you say *Wistaria*, no matter how you spell it."

The spelling of *Wisteria* in Nuttall's original discription in his "Genera of North American plants," published in 1816, as our correspondent notes, was so evidently a typographical error, that there would seem to be no need of apology for correcting it. That it was named for Dr. Caspar Wistar does not rest on any tradition, for Nuttall says so himself in a note on the same page, so that the fact of it being an error needs no argument to sustain it.

There must be some mistake about Dr. Gray having made the change at the suggestion of Mr. John Jay Smith. The name is spelled *Wistaria* in Torrey & Gray's Flora, published in 1838. When preparing that work, Dr. Gray was but a young man, assistant to Dr. Torrey, —possibly not more than 26 years of age. Mr. Smith was then between 50 and 60. Their paths were not in the same channel, and we doubt very much whether Mr. Smith knew of Dr. Gray's existence at that time.

In any event, a magazine like ours would not undertake to change any name. Right or wrong, the office of a magazine must follow the accepted dictionaries in these matters, or language would fall into inextricable confusion. It would be Babel over again. All the accepted dictionaries write the name *Wistaria*, and there is no alternative but to accept their dicta.

ENGELMANN CAÑON, COLORADO.—Frequent occasions have been taken to point out how unreliable are a large portion of statements that go on record as the "truths of history." Even in our own times, statements are given for facts which those living can controvert.

Just before us, for the first time, appears a pamphlet by Charles A. White, entitled a "Memoir of Geo. Engelmann." On page 19, we read "Dr. Parry, like other friends of Dr. Engelmann, delighted to do him honor. While engaged in his earlier explorations, he gave Dr. Engelmann's name to the picturesque Cañon through which now passes the cog-wheel railroad from Manitou to the summit of Pike's Peak, in Colorado."

It so happens that Dr. Parry knew nothing of this Cañon, nor did any other man up to 1871. It was marked on all the maps as the "Unknown Cañon." The first man to surmount the difficulties of its exploration was Prof. Thomas Meehan, who alone succeeded in getting through. Complimented by the surveyors, he was told by General Cameron, the head of the surveying party, that by virtue of being the original explorer he might give a name to the Cañon. On this suggestion, the "unknown" was erased from the map, and "Engelmann" substituted. Dr. Engelmann's name occurred to Mr. Meehan from the beautiful specimens of *Abies concolor*, a species which prevailed there,—and Dr. Engelmann's labors on the Coniferæ naturally suggested it.

ROSA RUGOSA.—It is well to remember that there are two distinct forms of the beautiful *Rosa rugosa*. The one known especially as *rugosa* is a comparatively recent introduction from the North of China. But there is another which has been known in the gardens of the curious, and, to some extent, in the better class of nurseries, for nearly a century. It is so nearly like the *rugosa* that nurserymen have come to consider them identical. Under its

botanical name, this is known as *Rosa Kamtchatica*. The only apparent difference between the two is that the latter is a dwarfer grower than the *rugosa*. We believe that nurserymen make no distinction between the two ; but considering the ratio of growth, it is worth while to keep them separate. Index Kewensis gives the *Kamtchatica* Rose as a synonym of the Cinnamon Rose. We did not know, until referring to this work, that it was so regarded ; and it has been a matter of surprise to the persons engaged in this department in the Meehan Nurseries, to find seedlings of the Cinnamon Rose that were certainly nothing but the *Kamtchatica* species. There is no doubt but that the two are varieties of each other. There seems to be no more reason why the *rugosa* should be considered as distinct from the *cinnamomea* than there is that it should be classed as distinct from the *Kamtchatica*.

GENERAL NOTES.

PORTRAITS OF WILD FLOWERS.—As a general principle, honors should seek the man, and not man the honors ; and yet there seems some truth in the political maxim that no man can be elected to anything unless he be first a candidate. We venture to seek some special honor for the colored plates in MEEHANS' MONTHLY. As accurate representations, they have probably never been excelled. They are not only as accurate as the most critical botanist would desire them to be, but, as works of art, are models for teaching flower-painting in the schools. There have been numerous paintings of *Lilium superbum*, but this picture, alone of them all, has the prettily mottled green of the stem, which is one of the charms of the species. We claim that these pictures alone are worth the subscription price.

FOREST FIRES.—The Fire-warden of Minnesota reports, that in 21 counties, last year, forest fires swept over 14,912 acres of light forest and meadow. He hints that settlers, burning of timber and prairie, are responsible for most of these fires. He thinks that people in America have little idea of what they mean when they talk of forestry. Only those who have seen the forests of Europe under forestry administration, he says, can have a true idea of what forestry means.

ERNEST WALKER. — Mr. Ernest Walker, whose intelligent notes on horticulture, botany, and kindred arts and sciences have so often given pleasure and profit to our readers, has been appointed Professor of Entomology in Clemson College, the State Agricultural School of South Carolina.

TREES AND TIDES.—A correspondent from Highland Park, Illinois, says: "I send you the enclosed clipping from the Philadelphia *Press* :—

'A very curious theory lately revived is that the sap of a living tree ebbs and flows in some way in sympathy with the ocean.

The idea comes from Italy, where a grower of vines and other fruit trees, who is also a chemist, has been experimenting in that direction. He says that no tree should be lopped or pruned except during the hours of ebb tide. He has taken fourteen years to come to this conclusion, and now always acts upon it.

The result is his trees and vines have developed beautiful foliage, bear splendid crops and are quite free from the attacks of the insects which devastate surrounding properties.'

I am surprised that you, in your most excellent publication, the MONTHLY, have not forestalled the Italian and given us the facts. We, of the inland seas,—seas that have no frills of that nature,—are deprived of the proper knowledge as to the exact moment when to 'lop.' We must get the weather bureau to fly signal flags, giving the proper information, otherwise we will have to soliloquize, and say 'to lop or not to lop, that's the question.'"

We have referred the further consideration of this wonderful "theory," in regard to the "flow of the sap," to Professor Saphead, a distinguished teacher in a prominent university.

THE NAVEL ORANGE.—Not only in size, but in quality, the Navel Orange is achieving a wide popularity. This is recognized to a great extent by orange growers, and a party in Riverside, San Bernardino County, California, has 40 acres of them now coming into abundant bearing.

ATTAR OF ROSES —Two ounces of attar of roses represent the refined product of a ton of rosebuds.—*Popular Science.*

POLYGONATUM BIFLORUM.

LESSER SOLOMON'S SEAL.

NATURAL ORDER LILIACEÆ.

POLYGONATUM BIFLORUM, Elliott.—Glabrous, except the ovate-oblong or lance-oblong nearly sessile leaves, which are commonly minutely pubescent, at least on the veins (but sometimes smooth), as well as pale or glaucous underneath; stem slender (one to three feet high); peduncles one to three- (but mostly two-) flowered; filaments papillose roughened, inserted towards the summit of the cylindrical-oblong perianth. (Gray's *Manual of the Botany of the Northern United States*. See also, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.)

The Solomon's Seals are not gaudy flowering plants; but there is a graceful style of beauty in their habit of growth that renders them very attractive. They have always been popular favorites, as is well indicated by the common name, Solomon's Seal, by which they are universally known. The origin of this common name is wrapped in obscurity. There is a six-pointed or star-like figure formed of two equilateral triangles placed over each other so as to make a star-like outline, and which is known as Solomon's Seal. To account for the term in connection with this plant, commentators tell us that when the underground root-stock is cut across, the outline represents this figure. Every effort to trace such a figure on a tranverse section has failed, so far as the experience of the author goes. It is far more likely that the name was suggested by the seal-like form of the flower,—the more suggestive from the fact that the grayish-green of the flower, itself, recalls some precious mineral. But though the Seal may be thus accounted for, the connection with the Solomon is not clear. It is probable that the plant had in past ages some popular history or legend connected with it, but which has become so utterly lost that nothing is left to us but the bare title of the story.

In connection with this subject, it is remarkable that in spite of its suggestive name and presence over most portions of the Northern Hemisphere it has not attracted the notice of polite writers. While one of its brethren, the Lily of the Valley, has adorned many a pretty tale, Solomon's Seal has been wholly passed over.

Referring to the former, Thomson, in his pretty poem entitled "Spring," admonishes us to

> "Seek the bank where flowering elders crowd,
> Where, scattered wide the Lily of the Vale
> Its balmy essence breathes, where Cowslips hang
> The dewy head, where purple violets lurk,
> With all the lonely children of the shade."

Solomon's Seal, with its many points of interest, may well feel jealous in regard to the celebrity which its humbler brother has achieved.

Some have said that the scar made by the disarticulation of the leaf from the rhizoma has the appearance of a seal. All that can be said is that for ages past the origin of the popular name has been a question. Gerarde, writing in 1636, observes: "Dioscorides writeth: That the roots are excellent good for to seale or close up greene wounds, being stamped and laid thereon, whereupon it was called *Sigillum Solomonis*, of the singular vertue that it hath in sealing or healing up wounds, broken bones, and such like. Some have thought it took the name *Sigillum* of the markes upon the roots, but the first reason seemes to be more probable."

Another clue to the origin of the common name, may be furnished by the term Lady's Seal, by which in common with Solomon's Seal, the plant was designated several hundreds of years ago. It was used in the ceremonies connected with the festival of the Visitation. In some way unknown, the name Lady's Seal has been transferred to the Virgin Vine, or the Wild Bryony of the Old World.

The botanical name, *Polygonatum*, is referred by modern authors to Adanson, Desfontaines, or Tournefort; but it is the original name under which the plant was known to the Greeks of ancient times, and which name the *Polygonatum multiflorum* of the Old World still bears among the Hellenic races. What is now the Lily of the Valley, was known to

the earlier botanists as *Lilium convallium album*. Out of this Linnæus founded the genus *Convallaria*, uniting the older *Polygonatum* with it though retaining the proper name as an adjective under the style of *Convallaria Polygonatum*. Desfontaines, however, in the *Annales du Museum d'histoire Naturelle* of Paris, (not *Memoirs du Museum*, etc., as quoted by Pursh), in a "*Memoire sur le Genre Convallaria*," which appeared in the vol. for 1807, carried all the axillary-flowered forms of *Convallaria* back to *Polygonatum*, in which view all modern botanists have concurred.

But there is still a difference of opinion as to the limits of the species. The first notice of our plant as a distinct species seems to have been by Thomas Walter, who published a Flora of Carolina in 1788. He describes it as "*Pedunculis solitariis bifloris axillaris,—floribus flavescentibus.*" Michaux, approving of the new genus *Polygonatum*, supposed this to be the same as *Polygonatum multiflorum* of the Old World; and though the subsequent author, Elliott, in his "Sketch of the Botany of South Carolina and Georgia," published in 1816, established it under the distinctive name *Polygonatum biflorum*, he seems to doubt its distinctiveness from the *P. multiflorum* as described by Michaux; while Pursh can see little difference between it and the *Convallaria Polygonatum* of Linnæus. The plant is seen under so many different forms that, even to-day, there may be a reasonable doubt whether it is worth while to make any distinction between the American form and the European, and whether the adopted name may not be *Polygonatum multiflorum* as Michaux supposed it was. Dr. Gray remarks that the hairy filaments, which are characteristic of *Polygonatum multiflorum* in the Old World, he has never seen in plants of America; but, as he notices in the present form that the filaments are "papillose-roughened," we may as reasonably look for a development of hair as to find the presence or absence of hair on other portions of the plant. Indeed the opportunity to examine a large series of specimens of the genus, from many parts of the world, leads to the conclusion that all three species, of *Gray's Manual of Botany* cited, *Polygonatum biflorum*, *P. giganteum*, and *P. latifolium*, are not essentially different from *P. multiflorum* of the Old World.

It is very interesting to note the variations as they occur in different places. Along the mountains of Virginia and North Carolina, the leaves are very narrow,—so narrow that one might almost take the plant, at first sight, for a broad-leaved grass. A specimen in the Academy of Natural Sciences of Philadelphia, with a Rafinesque label, appears as if he intended this very narrow form to represent a new genus *Sigma Mariæ biflora*, whatever he may have intended by that, is written on the label. A specimen gathered by Michaux, but out of flower, is so much like a specimen of *P. multiflorum* from the Mountains of Piedmont, that it is not surprising Michaux supposed the American and European forms identical. Specimens from New England have roundish leaves, with the underside glaucous; and specimens from the Tyrol, collected by Ball, are glaucous like-wise. In size of leaf and vigor of the stalk, there are the same gradations; while the biflowered pedicels occur in European specimens. The specimens of *P. multiflorum*, from the Old World, vary among themselves in the same lines that ours do. In specimens from Switzerland, the main axillary pedicel has the flowers arranged in racemes instead of in terminal clusters, with depauperate leaves as bracts to each pedicel.

If we take, as we probably may from these illustrations, the American and European forms as all representative of *Polygonatum multiflorum*, it gives the plant a remarkably wide distribution over the surface of the earth. In our country, it is found in all the territory lying between the higher portions of Canada, South to Arkansas, and from the Atlantic Ocean to the Rocky Mountains; while the European branch is found through most of the temperate portions of Europe and Asia.

As already seen by the reference to Dioscorides, it has had some reputation for many ages in connection with medical usage. A decoction is used in sore mouth and throat affections. The starchy roots are good when cooked; and the young shoots may be prepared and eaten like asparagus. A beautiful and permanent green dye has been prepared from the leaves.

EXPLANATION OF THE PLATE.—1. Rhizoma with base of flowering stalk from a plant growing near Philadelphia. 2. Upper portion of the same taken in June. 3. Section with berries taken in August.

WILD FLOWERS AND NATURE.

SANGUINARIA.

Or Sanguinaria, in her virgin dress
Plaits the sweet coronal of transient Spring.
—SOLOMON CONRAD.

LILIUM SUPERBUM. — The January plate, *Lilium superbum*, is a magnificent reproduction; and while, perhaps, no better than many others issued by you, the subject is very familiar. I have found that, in our district at least, the best specimens are taken in somewhat stiff clay ground subject to annual spring inundations. Here they grow upwards of seven feet tall, rearing their brilliant candelabra far above the writer's head, sometimes more than twenty blooms upon a plant, while those of seemingly richer soil never seem to attain either the height or abundance of flowers; but different parts of the continent may produce other effects. J. M. DICKSON.

Hamilton, Canada.

GREEN ROSES.—Referring to a note in vol. vii, page 193, a correspondent says:—"Will Mr. Meehan state whether he saw any green-flowered forms in Alaska, as a friend of mine (a gold hunter) brought down a spice-can full and said that there were thousands of bushes covered with green flowers on the Pacific slopes?"

The two roses, commonly wild in North-east Alaska, are the Nootka Rose, *Rosa Nutkana*, a very pretty species in color, and not unlike in other respects the well-known Rugosa Rose,—and the Alaska Climbing Rose, *Rosa gymnocarpa*, which sends its slender stems high over other shrubs, and covers them with its numerous, small, red seed-vessels, as if the shrubs were covered with hawthorn berries.

The green roses referred to were probably cultivated. Southern Alaska, on the borders of the State of Washington, is a paradise for the rose. The cultivators send far and near for varieties, and doubtless the green rose has been favored among the rest.

OPUNTIA RAFINESQUII.—Mrs. E. D. Ferguson, Troy, New York, furnishes the following notes regarding the beautiful hardy cactus, *Opuntia Rafinesquii*, growing near that place:

"MONTHLY, Vol. II, page 81, I find illustrated *Opuntia Rafinesquii*. This plant is growing wild on the top of, what is called on the map, 'Mount Marino,' just south of the city of Hudson. When we bought the place, fifteen years ago, it was there and has spread very little since. We have left it undisturbed, with the exception of forking up enough to complete a drive-way through it to the top of the Mount. It is very beautiful when in full bloom, as there is a quantity of it. I think this is the farthest north that it grows 'wild,' is it not? No one seems to know when or how it came there,—at any rate, it seems perfectly at home."

Hardy opuntias in a wild state are sights worth seeing. Can anyone report *Rafinesquii* or other species further north? Correspondents from Missouri have mentioned this species, but no other. Surely *O. vulgaris* is to be found in some portion of that State.

RHODODENDRONS IN NORTH CAROLINA.—A correspondent from Blowing Rock, North Carolina, says:—"When I arrived here, in early May, 1897, the flowers were most beautiful. *Rhodora* and *Rhododendron Catawbiense* were in full glory—and many others besides. There was nothing, though, in quantity and purity to compare with the *Kalmia*. The whole country seemed to be covered with drifts of pink and white snow. I was pleased with your article on our 'Wampee,' *Lilium superbum*. In Uncle Elliott's Botany he speaks of the variety with acute and auriculate leaves as being rare and rather small, whereas it now grows *everywhere*, and I have seen plants five feet high, with blossoming spikes 6 and 7 inches in length. I have not his work with me, and I cannot recall just now its specific name."

LILIES AND LOCAL BOTANY. — Doubtless many readers of MEEHANS' MONTHLY have occasion to regret, that they are not more particularly posted on the localities where certain plants may be seen and enjoyed in all the beauty of natural surroundings. They are not so situated as to be able to conveniently search the woods and fields, for such flowers as may have appealed to their interest when described or illustrated by some more fortunate of Nature's admirers. Take, for illustration, the much-admired colored plate of *Lilium superbum*, which appeared in a recent number of the MONTHLY. Were a canvass made of all those who saw the picture, it would be found that comparatively few have enjoyed a sight of this flower in its home ; yet not one but rejoices to see the representation that is more or less familiar to every one.

Because of the infrequency of actual contact with Nature, it is impossible to receive a lasting impression of every flower, fruit or leaf that is seen on a general trip. But with an object in mind, memory centres on that point, drawing others into the whirl, and the "jaunt," though short, proves wonderfully interesting and the information well defined.

Within easy reach of all cities, are many plants that are much talked of and written about, but never seen by the majority of persons.

Let a person pay his respects to these plants in their homes, and he will return home with satisfaction and profit.

Unfortunately, the general public are called upon to throng the exhibition halls, where the instinct is trained to regard with greatest interest the monstrosities and scarcely useful variations in color and shapes produced by the florist—notably in the case of chrysanthemums. It is not to be wondered at that the heavy heads of chrysanthemums require hundreds of stakes, for they would otherwise bow in humility from their real uselessness.

As the train passes through New Jersey, from Philadelphia or Camden to the numerous coast resorts, some may have noticed small dashes of reddish-brown in rather low portions of ground. As a rule, these patches cause but a momentary reflection, and the pretty *Lilium superbum*, that had appeared in view, remained unidentified.

Were they aware of it, some would not hesitate to spend a few hours in visiting these spots. The above-mentioned species may be found in New Jersey in the early part of August ; *L. Canadense* and *L. Philadelphicum*, are also there, but in bloom a little earlier. The bulbs are readily transplanted, even at that season, and if the finder will care to transfer a few to his garden, he may do so without ravishing the little clumps, by lifting them very carefully and keeping the bulb moist until promptly placed in his own garden, in rather low ground where they will not suffer for want of water.

Learn to know plants, as individuals, in their homes ; encourage your friends and family to do the same ; take them nature-seeking just as you go a-nutting ; treat the flowers you find to more than passing thoughts of admiration, and you will surely find a new interest of a thoroughly happy kind.

Will not the readers of the MONTHLY profit by these remarks and open the way for others to go and "do [see] likewise "? M.

APOCYNUM. — NORTH-AND SOUTH ROOT. — Dr. Gray mentions two species of the dogbane, *Apocynum*, and several variations. The plant under consideration approaches more nearly to the description of *A. cannabinum* or Indian Hemp. It has always been a wonder to me that the bark of this plant has not been utilized for textile fabrics. The inner bark is very strong, soft and white, with a stem pithy and soft. Its root has many uses for medicinal purposes. It will cure chills and fever and all malarial disorders. It is very bitter ; and I know men who dig it and, when troubled with chills, chew it. It is also used in decoctions with May-apple root (*Podophyllum peltatum*,) *Rhus copallina* (Dwarf Sumach,) and the roots of the Wild Indigo, which is found growing in the pine woods of the western shore of Maryland. The roots of these plants are boiled and given in the last stages of syphilis, and are always a sure cure. I know a man who has made many cures with this decoction when doctors had given up their patients to die. It is known only under the name of North-and-South Root, and these practitioners make a good thing of it in curing these diseases. These people claim that the root always grows north and south ; but it is not so, for I have dug many of the roots which

grow to suit themselves. There are two main roots which extend laterally in opposite directions. The young shoots of this plant boiled with asparagus make a mess which once tried will never be tried again. A brother was collecting the shoots of the Wild Asparagus, which grows in immense quantities on the salt-water shores of Maryland, and the shoots of *A. cannabinum* were observed growing in plenty. They had a tender, inviting look, so he gathered a handful and we boiled them with the asparagus. We had to throw the mess away, for we thought there was death in the pot, they were so bitter, and we lost the best part of our dinner by so doing.

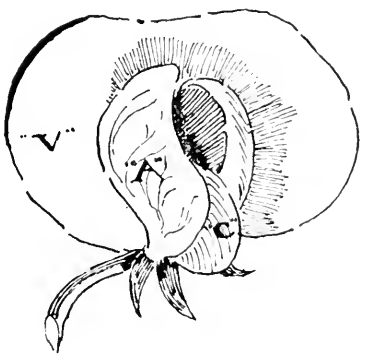
The bark of the root of *Rhus copallina*, Dwarf Sumach, is an excellent cure for heartburn or indigestion. A little of the bark is chewed and swallowed and the disagreeable sensations soon pass away. It is used either fresh or dry, and is pleasant tasted. It always cures me, and others say the same. The Wild Indigo, *Baptisia tinctoria*, or False Indigo, has pretty yellow, pea-shaped blossoms, and small oval leaves, thick and simple, with a disagreeable smell when bruised. The most use I have ever seen made with the plant is placing the plants beneath the bridle headstall on the horses' heads, to keep the carnivorous flies from plaguing the horses, whilst on the roads or at work.

F. K. STEELE.

Festus, Mo.

OUR WILD CHERRIES.—In the early history of America, two species of cherry were found wild. The common one grows to a large tree, and was named, by the botanists, *Cerasus serotina*. This is what is usually understood when referring to the Wild Cherry. Wild Cherry bark and Wild Cherry Tonics of the Drug Stores are obtained from this species. There is another species which seldom makes a tree of any size, and is more commonly known as a large shrub. This is the *Cerasus Virginiana*. It is better known, in distinction to the other, as the Choke Cherry. It is more closely related to the Bird Cherry. The Bird Cherry is known as the *Cerasus Padus*. Since the introduction of the common cherry of the Old World, birds have carried seeds from the gardens to the woods, and this cherry has now become almost as common in some of the woods around certain cities as though it were indigenous here. This is even called the Wild Cherry, when speaking comparatively with the garden one. But the names tend to confusion with the American Wild Cherry. Nurserymen, in order to prevent confusion, have almost universally adopted the name of *Mazzard* for the wild forms of the garden cherry.

SWEET PEA DESCRIPTION.—Many amateurs and some professionals are frequently at a loss for proper words in describing certain flowers. The Sweet Pea, for instance, is so arranged that the average person does not know what to term the parts of the flower. The accompanying sketch will assist those who desire to understand what are getting to be every-day terms among lovers of Sweet Peas. The broad,



upper petal, marked "V" in the illustration, is the *vexillum* or banner. The two lateral petals, "A," are the *alæ* or wings. The two lower, interior petals, "C," sometimes united, form the *carina* or keel. As a whole, the arrangement constitutes a papilionaceous flower (butterfly-shaped); and this type is the foundation for a sub-order, in the botanical arrangement of families, known as *Papilionaceæ* (Natural Order *Leguminosæ*).

CHANGING BOTANICAL NAMES. — Whilst every botanist would agree that the compliment to Prof. T. C. Porter is a deserving one, in commemorating his name by giving it to a genus of plants, how do these botanists, now clamoring for the rights of priority in this matter, reconcile the making of this change with their latter-day doctrines and practice? Some of the names we have been familiar with since childhood, we no longer find in "up-to-date(?)" botanical publications, because they

have been discarded for a still older name that we knew not of but for which priority is claimed. On what grounds, then, can these same authorities justify creating and substituting the name *Porterella* for that of *Gerardia?* The genus gains nothing by the change; but another element of confusion is added to vex the future student. A short time back, I saw an article with the title "*Catalpa Catalpa*," and thought I was going to read of a new species; but the name was delusive, or I was not "up-to-date," as it proved to be an article on our old friend *Catalpa speciosa*. Our lamented contemporary, *Garden and Forest*, has been giving some excellent articles on cultivated conifers; and, in one of the series, I observe the old Norway Spruce remains no longer *Picea excelsa*, but is *Picea Picea*. There may be substantial botanical reasons for making generic and specific names identical, but I do not know them, and possibly that is why they appear to me as verging towards the ridiculous.

Madison, N. J. A. HERRINGTON.

It was *Laurentia*, and not *Gerardia*, that *Porterella* was associated with (see January issue, page 15). What our correspondent calls "up-to-date" practices, are confined to a limited circle. These changes are not recognized by the great majority of botanists over the wide world.

It has been found utterly impracticable to adopt these changes in horticulture. Horticulturists freely grant that the law of priority should have prevailed; but they object to being made to suffer because botanists themselves did not see that priority did not prevail.

When, some twenty years ago, horticulturists were told that the Norway Spruce, which they had known for a century as *Abies excelsa*, should be *Picea excelsa;* and the Silver Fir, *Picea pectinata*, should wheel about and hereafter be *Abies pectinata*, a few leading nurserymen fell into line. The effort to change was made in their catalogues and writings. Not one but has not been sorry it was attempted. They are in no humor to go over that labor again, especially in the wholesale way suggested.

The readers of MEEHANS' MONTHLY will find the plant names employed here to be those that are generally accepted by botanists everywhere, and not those in comparatively limited use.

INFLUENCE OF LIGHT AND HUMIDITY ON THE ODORS OF FLOWERS. — When Fredrika Bremer visited the United States, in 1849 and 1850, after having been in Cuba, she remarked that the atmosphere of Cuba absorbed all odors. Everyone smoked, yet the air was free from the taint of smoke. Also, she observed that a rose, elsewhere very fragrant, was without perfume in Cuba. I had observed, when onions were used that were imported from Cuba, the odor was much less intense than from those raised in New England.

Miss Bremer also remarked that in coming to the United States from Cuba, every day seemed to be a cloudy day; the contrast was so great with the brilliant light of Cuba, where the sunshine was intensely bright. If Miss Bremer had come to Southern California, she might have found some bright days. But at that time it was a wild place, devoted to Mexicans and their horses, sage brush, cacti and coyotes.

When we came to California in 1879, I was at first much impressed with the clearness of the atmosphere. The planets seemed exceedingly bright and all the stars almost like near neighbors. E. E. ORCUTT.

San Diego, Cal.

SEEDLESS ORANGES. — C. K. Meredith, Hampton Falls, N. H., says: — "Is the absence of seeds in the orange a natural condition, or is it caused by artificial means?"

The variety known as the Navel Orange is seedless. It is a natural variation or sport, with which art has had nothing to do. The core or seed-producing part has not remained at rest as in the normal orange, but has started to make a further growth resulting in another small orange at the apex of the old one, instead of bearing seeds as it should have done. It is propagated by budding or grafting, and here, alone, does the art of man take part in the production.

OPHIOGLOSSUM.—Referring to the note on *Ophioglossum* in a recent issue, a California correspondent says that *Ophioglossum nudicaule*, the serpents tongue, was formerly abundant in the vacant lots about San Diego. So far as known to the writer, there has been no record of any species of *Ophioglossum* being found in California hitherto.

GENERAL GARDENING.

OBSERVE THE ARBOR DAY.

Let all observe the annual Arbor Day;
Without excuse for want of time, or age;
Blend manly toil with cheerful, happy play,
And in a noble work of trust engage.

The boy when grown to manhood's graver years,
In contemplation sits beneath their shade,
In vision's magic glass again appears,
Many a scene in seeming life arrayed.

Will see again his father plant the tree,
When he with boyish hands heaped up the ground;
Will hear his sisters' loud and girlish glee,
In memory still with joyous songs resound.

Ah, he's a benefactor of our race,
Who lives not for himself alone, or pay,
But with a kindly heart of trust and grace,
Will plant some useful trees on Arbor Day.

—C. L. LOCHMAN.

Bethlehem, Pa.

TIME OF BLOSSOMING OF DIFFERENT TREES AND SHRUBS.—In the list below is given, for the season of 1897, the dates of flowering of many trees and shrubs in this locality. Henderson, Ky., is in the Lat. a little below 38° and Long. nearly 11°. I also add short notes on some of the different kinds for this locality.

Peach.....April 1
Plum.....April 4
Pear.....April 8
Spiræa prunifolia (Bridal Wreath) April 8

The latter, is with us, a valuable shrub. Holds its flowers about 30 days. Form good, when not trimmed at the bottom. Leaves color well in the fall.

Black Haw.....April 10
Cherry.....April 13
Red Bud (American Judas Tree)....April 13
Bush Honeysuckle, Pink.....April 15

Very beautiful in the early season, but with us, in the heat of summer, quite unsatisfactory in habit. Upon the whole, not desirable with us.

Oaks.....April 16
Apple.....April 18
Calycanthus (Does well with us)....April 21
Lilac.....April 21

Of late years, the lilacs have not done well with us. Takes them a long time to get established and of any size; and, even then, are rendered unsightly by the white blighting of the leaves in mid-summer.

Dogwood, *Cornus florida*.....April 25

Admirable in flowers, summer habit and autumn color. Not sufficiently appreciated. Nothing can be more beautiful than its horizontal lights and shadows in a summer's sun. Taken all in all, the most beautiful, small-sized tree we have.

Spiræa Van Houttei.....April 25

Both in flower and habit, a very beautiful and satisfactory small shrub. Its flowers, however, do not last more than ten days.

Bush Honeysuckle, White.....April 25

Same remarks as to the Pink above.

Common Wistaria Vine.....April 25
Snow-Ball.....May 1

Does well with us, and very satisfactory for a coarse and large shrub. Very beautiful at a distance, but the Japanese is better near a dwelling.

Weigela.....May 1

Most beautiful and satisfactory in all points. Grows very luxuriantly with us.

Deutzia gracilis.....May 6

Beautiful small shrub.

Mock Orange.....May 10

Very satisfactory.

White Fringe.....May 13

Does well with us. A beautiful shrub both in flower and in its rich dark green leaves.

Blackberry.....May 13

Like a lady of good taste, Mrs. W. A. K., in your January number, has said some good things for the blackberry, but it should only be used in the wild garden or at a distance. Let me here suggest an excellent use of the blackberry. If your horse and cow pasture joins your pleasure grounds, instead of the usual ugly fence, plant a belt of blackberries about ten feet wide. They should be planted quite thick and the bed should be well manured. In a short time, you will have a very picturesque and quite effective barrier against your horse and cow. The cow will nibble the ends of the shoots on her side, but you will not see this on your side.

Of course, such a hedge should be at a distance, and not seen in conjunction with the ornate portions of your grounds. And, just here, permit me to animadvert against the extreme view which now seems in fashion concerning the natural in landscape art.

Under the proper environments, the wild and picturesque will always deeply impress a man of refinement; but the environment must be right. Brought in juxtaposition with the artistic forms of our habitations, the result will be incongruous, and hence will do violence to all cultured minds.

Tulip Tree.....May 15

Grows luxuriantly here. This tree should never be planted near the house, as it is liable to be overthrown by winds.

Common Locust.....May 15

After a few years, it is worthless as an ornamental tree.

Garden Roses.....May 18

With us, the only ones suitable for lawn effects are the common, hardy, vigorous growers, that bloom only once in a season.

Deutzia (Excellent).....May 20
Red Haw or Hawthorn (Cockspur)..May 20

While young, much infested with plant lice.

Common Privet.....May 27

Does well with us. A very valuable shrub.

Catalpa speciosa.....May 29

Too frequently attacked by a very large and peculiar worm to be used as a lawn tree.

Crimson Rambler Rose.....June 6

Beautiful.

Rudbeckia fulgida.....June 10

Nothing more suitable for the borders of the wild-garden. Blooms from six to eight weeks.

Clematis (Carolina Blue Bells).....June 10
Common Elder.....June 10

A vigorous grower. Beautiful and picturesque at a distance and in the wild garden. The golden and the variegated are less robust. Elders require much sun.

Hollyhocks (Perennial).....June 10

Do well with us. They of course look very effective in the borders.

Wild Running Rose.....June 15

Very suitable for the wild garden.

Native Hydrangea.....June 15

Rich growth. Wild garden.

Magnolia grandiflora.....June 20

This beautiful evergreen becomes acclimated after a winter's struggle.

Althæa.....June 26

Does well.

Common Trumpet Vine.....July 1

This and the Virginia Creeper are excellent to cover decrepit trees.

Phlox, Rose Color.....July 8

Beautiful. Blooms nearly all summer and fall.

Wild Flag or Lily.....July 10

Good in the wild garden.

Rudbeckia (Golden Glow).....July 20
Phlox, White.....July 21

Beautiful, but not so lasting in bloom as the rose color.

Hydrangea pan. grandiflora.....July 27

With us, this beautiful plant should only be planted in reach of the water hose.

Garden Chrysanthemum.....Oct. 15

G. M. ALVES.

[Reports of this nature from different sections would prove of some benefit to those contemplating planting.]

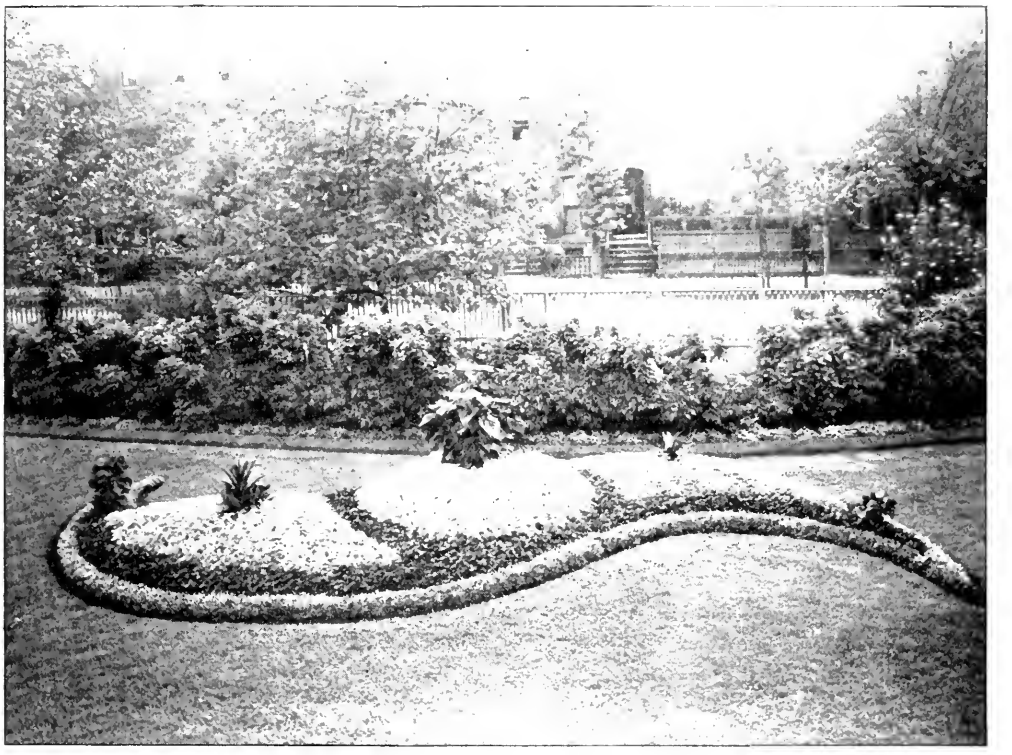
LONGEVITY OF THE NASTURTIUM.—There are few plants better known than the common *Tropæolum* or, as many flower-lovers have come to briefly call it, "Sturtion," for this is the way in which its name is quite frequently pronounced. It is a remarkably interesting plant, wholly aside from its curiously-formed and yet showy flowers. Even the most advanced scientific botanist may derive very interesting lessons from its study. Mrs. Kellerman recently gave the readers of MEEHANS' MONTHLY an interesting account of its variations, which were particularly instructive to the teratologists. Another interesting fact is, that although recorded as an annual in botanical works, plants have been known to live for many years.

The fact is, a very large number of plants which are annuals in some climates, or under certain conditions, are perennials under other circumstances. Even our cotton plant, which is an annual as seen in our cotton fields, becomes a perennial in some parts of India and other portions of the world. There really does seem to be numbers of plants that insist on living for but one year; but even these can be continued by cuttings for an indefinite period of time.

The writer has a Nasturtium plant which is already four years old, and is yet as hale and hearty as anything of life can be. The interesting point to the scientific person is that,

although we may find the stems of the plant three or four years old, there will not be found any woody tissue. You cannot tell the age of a Nasturtium by counting rings of wood as in other perennial stems. The stems are, in fact, quite hollow. But we do find annual circles of bark by carefully examining them with a microscope. There is no thickening of these stems, therefore, so far as diameter is concerned ; and yet there is a thickening of this circular structure from the inside,—that is to say, there is a lessening of the diameter of the interior cavity. It is in this way that the increased longevity is attained. It seems to be a case where the bark system has possessed the power of perpetuating itself independently of the usual woody foundation.

Another interesting fact, to be observed on this plant, is the extraordinary growth that the stems will make when they find support from some neighboring plant, as compared with the growth when the branches are made to support themselves. It is a fact, placed on record by the writer of this, in the Proceedings of the Academy of Natural Sciences, over a quarter of a century ago, that plants have to expend a large proportion of the nutrition they receive in opposing gravitation,—that is, in supporting themselves. Where they receive support from outside, this expenditure is saved, and the nourishment, usually required for self-support, is spent on the increase of structure. A Nasturtium, supported in a comparatively mild conservatory, may make a growth of three feet in two weeks, while it would not make a foot of growth when left to its own means of support. This fact, gathered from an observation of this plant, is of very great practical use. Those who have the care of twining plants save much by helping to support them. A grape vine, when it has a chance to run over a tree, will make a vigorous, healthy growth to three times the extent in one season than it will when the branches find nothing to cling to.



VIEW IN THE GARDEN OF JAS. W. ELWELL, BROOKLYN, NEW YORK.—SEE PAGE 58.

Another lesson is the fact, that however botanists may play "battledore and shuttlecock" with botanical names, it is not possible to change a name when it once gets into gener-

al use. When Linnæus reformed botany, he found the name *Nasturtium* to many genera. He dropped it, in this case, and made *Tropæolum* of it,—the name being of Greek derivation, from its shield-like leaves. But the people would have none of it. Their dear, old favorite is Nasturtium yet, though reduced to "Sturtion" for short.

ORNAMENTAL GARDENING.—The illustration on page 57 represents a scene in the garden of Jas. W. Elwell, of Brooklyn, New York, which is under the charge of Mr. Jno. A. Boyle, as gardener. As a specimen of perfect art in the gardenesque style, it would be difficult to criticize unfavorably. If anyone can suggest a weak point, these pages are open for the purpose.

HARDINESS OF TREES.—To those of your readers living in Pennsylvania, the coast line of New York and Connecticut, the statement of Ernest Walker, that the English Walnut is considered tender in the latitude of New Albany, Indiana, will seem strange, for, in the places named, it is hardy enough for all purposes. But Mr. Walker gives a very good reason why it is not hardy, and his remarks are along the same line the MONTHLY has taken on several occasions. It is the hot sun following a heavy freezing that does the damage, hence the advantage of planting anything of which there is doubt in a place free from the winter's sun. The practical gardener understands this when he thaws out frozen geraniums in cold water in the shade. If he thaw them quickly in the sun, they die, just as the walnut and the *Magnolia grandiflora* do—or, at least, the foliage of the latter. We do not need to select a sheltered place for the walnut here, but plant it wherever convenient. We do try to get a shady place for the magnolia, and this is all it asks. So it can thaw gradually, it does not mind the freezing. There are large trees standing out alone, which were protected from the sun when young, which now take care of themselves. The foliage on the south side gets disfigured towards spring, but not that on the north and east. There are so many leaves that one protects the other; still, where practicable, shade for the southern side is advised.

Germantown, Pa. JOSEPH MEEHAN.

NEW OR RARE PLANTS.

PHYSALIS FRANCHETTI AND P. JAPONICA.—*Physalis Franchetti* has not proven with me and a neighbor as desirable as the catalogues had led me to expect. Seed planted last March germinated readily enough, but by the end of the season, the plants were still very small and had shown no signs of blossoming or fruiting. Three *plants* obtained in May were set out in good soil and sunlight, but made but slow growth, although they had every attention. By the end of the season two of the plants had one fruit each, but the third had none. Some *Physalis Japonica* (catalogued by one firm, last year, as a novelty) were grown immediately alongside of the *P. Franchetti*, and grew to a height of over four feet, blossomed and fruited profusely, but alas; the fruit was green and remained green to the end. These *Physalis Japonica* were raised from seed started the same time as the *Franchetti*, but made greater progress than did even the plants of the latter, which were about four or five inches high when procured from the florist. With me, the *P. Franchetti* was anything but attractive, and the color of the husks was a dull red. I should much like to hear the experience of other amateurs with this extensively-advertised and lavishly-lauded plant. The texture of the leaf is such as to invite the attacks of red spider, and this I found to be the case, compelling me to wash the underside of the leaves often. On attempting to pot a small plant of the *P. Franchetti* in the fall, I found that the root had extended in a lateral direction underground to a greater distance than the height of the plant, which leads me to believe that it may prove an undesirable inhabitant of the garden if growing shoots are sent out all along these spreading roots, as it is said to be a hardy perennial. L. C. L. JORDAN.

Bergen Point, N. J.

This report on a candidate for popularity is very valuable to those who have not yet secured their plants; but possibly a different treatment may yield better results. Can anyone add to what has been said?

As noted, the color is a dull red,—deep red was suggested rather indefinitely in the previous article,—but this lack of immediate personal charm will not prove an entire drawback, as it is claimed valuable for arrangement with

bunches of other material in decorations where a harmony or contrast of color would be desirable.

Physalis Japonica is advertised as the Abyssinian Tomato, valuable as a garden fruit and not for ornament.

In the same strain, Burpee says: "We do not recommend it. The growth of the plant is too straggling to make it ornamental and the fruits are not edible, as claimed. Two of our boys tried eating some the past summer and became uncomfortably sick! We have had it on trial for two years."

The conductors of MEEHANS' MONTHLY have eaten a few of this species, and found it unpalatable in a raw state; but *P. Alkekengi* is rather agreeable and preserves well.

GERANIUM MADAME BRUANT.—One of the most pleasing geraniums ever seen by the writer is the variety Madame Bruant. The productions of Mons. Bruant are so generally recognized as being extremely meritorious, that the mere fact of the name given our subject, would tend to assure one of its worth. The flowers are single, of large size and produced in large trusses, have a large centre of white, lightly carmine-veined, distinctly and regularly bordered with bright solferino. Because of the peculiar arrangement of colors of the flowers, it is undoubtedly shown to best advantage as a pot plant, though beds viewed at short distances should show equally as well.

Messrs. Storrs & Harrison Co., of Painesville, Ohio, are propagating it largely, and they report it to be "a vigorous grower, very free flowering and a continuous bloomer winter and summer."

BOWIEA VOLUBILIS.—A LEAFLESS PLANT.—A plant without true leaves is frequently as interesting as any with leaves. The *Bowiea volubilis* is one of this character, leaves developing only in its second or third year. It is a plant that one delights to watch in its growing season. From an odd, fleshy bulb, one or two herbaceous twining stems arise to the heighth of two or three feet. These stems are delicate looking and of a pretty green color, and ramble gracefully over a little trellis. A subscriber, to whom the conductors are indebted for this interesting specimen, says his plant is growing at a rate of half inch a day.

ARISÆMA FIMBRIATUM.—The genus *Arisæma* belongs to the family of aroids. It is nearly related to the *Arum* and *Arisarum*, and comprises a half-hundred species, the largest number belonging to Asia or America. One of the most remarkable is *A. fimbriatum*, with its dark purple spathe, streaked lengthwise with white lines, and its long hanging spadice all covered with hairy, purplish filaments.

It is a very curious plant, introduced from the Philippine Islands by the establishment of William Bull, of London. It is of easy culture, and needs only to be taken in early and placed in a temperate bed, that it may rest until towards the end of summer. It can be forced into rest by not being watered, which retards its vegetation.

Translated from *Lyon-Horticole* by

SARAH M. LANNING.

DAHLIA IMPERIALIS.—One would hardly imagine, from the illustration, on page 61, the subject to be a dahlia—at first sight. The popular impression would suggest it to be something of a lily,—and, indeed, "Lily-

Dahlia" has been suggested as a common name for it. Plants of the dahlia family are, however, easily distinguished from other families closely related by the small, green, leaf like series of scales at the base of the head of florets, as well shown in the accompanying illustration. It was first discovered by the late Benedict Roezl, in 1863, in Mexico. Its specific name, *imperialis*, is from its imperial or majestic growth. Mrs. Theodosia B. Shepherd, of Ventura, California, has found it to reach 10 or 15 feet in height. In a wild state, the color of the flowers is somewhat like that of the *Cosmos*—a vermillion pink; but in the hands of improvers like Mrs. Shepherd, we may soon see it broken up into numerous shades of color.

SWEET PEAS FOR 1898.—The Sunset Seed & Plant Co., in their third edition of the "Sweet Pea Review," enumerate the following 1898 introductions, placing them in three classes, according to merits shown by their tests:

First Class.

Golden Gleam, (Yellow.)
Salopian, (Crimson.)
Prince Edward of York, (Scarlet-crimson.)
Lady Nina Balfour, (Mauve-bluish.)
Shahzada, (Deep Maroon, or closely-allied deep tints.)
Triumph, (Deep Maroon, Standards and wings of slightly different tints)
Emily Lynch, (Same shades, Flaked and Clouded.)
Countess of Powis, (Same color; rich metallic.)
Striped Celestial, (Variegated; Bluish-Mauve.)
Columbia, (Tricolor.)

Second Class.

California, (Pink.)
Coronet, (Variegated Orange-rose.)

Third Class.

Queen Victoria, (Not true) (Yellow.)

THE HARDY FLOWER GARDEN.

HERBACEOUS PERENNIALS FOR THE AMATEUR AND THE FLORIST.—Now is the time to plant herbaceous perennials. The demand for them of late years is rapidly increasing, not only in the great cities and private parks, but they are also admired by the owners of small city yards and farmers' gardens,—and they do well everywhere, planted for effect in big masses, as well as single specimens. Herbaceous plants are unequalled for planting in front of shrubs and evergreens in beds, or borders, and are very effective mixed with decorative grasses on the borders of creeks and water sceneries.

The great value of using this class of plants lies also in the fact that lots of them can be planted in dry, sunny spots, as well as in quite shady places where hardly any of our annuals could be used with success. The great nurseries now catalogue grand collections of these plants. A few with very effective flowers are:—

Achillea Millefolium rubra.
Agrostemma Coronaria.
Althea rosea fl. pl. (Hollyhock.)
Aquilegia (Columbine.)
Armeria maritima, very useful for edging borders. The pink flowers are very pretty, rising only 6 inches above the compact, dark green foliage.

Asters in different varieties are unequalled for planting in groups. They flower in the autumn and are excellent for cut-flower purposes.

Astilbe (Spiræa) *Japonica* is valuable as a border plant. If so desired, it can be trimmed to any shape.

Boltonia latisquama is very attractive in autumn.

Centaurea varieties. No perennial collection should be without these effective flowering plants.

Convallaria majalis and *majalis fol. variegata*, for half shady situations, are well-known as Lilies-of-the-Valley.

Coronilla varia is exceedingly pretty and a frequent bloomer.

Funkia assorted; of the greatest value to plant in shady parts, under trees, the smaller varieties as edging plants. They are very decorative.

Geranium sanguineum. The flowers of this last a very long time.

Helianthus of various kinds. These perennial sun-flowers, growing 4 to 5 feet high, have very showy flowers. No garden, large or small, should be without them.

Hemerocallis varieties are very desirable for

planting in low ground, although they will thrive under trees and even in hot and dry soils of various kinds. They grow, almost any where, from 3 to 4 feet in height.

Iris in assortment, especially the so-called German and Japanese, make a grand display in the border. They are very easy to grow in almost any soil.

Lysimachia vulgaris and *clethroides* are both exquisite for border planting.

Pæonies may be planted in groups, and will stand for many years without requiring transplanting. Some varieties are quite fragrant.

Pentstemon Digitalis. It is to be regretted that this fine plant is so seldom found in gardens.

Phlox decussata. Every year brings new varieties of this elegant bloomer. Valuable for shrubbery beds, or to plant in groups or borders.

Phlox subulata is a creeping *Phlox*, and unequalled, in half shady, moist situations, for covering the ground.

Polygonum cuspidatum. A very rapid grower, excellent as a single plant, or to hide fences and small buildings during the summer. It reaches a height of ten feet in good ground.

Saxifraga, *Sedum* and *Sempervivum* of various kinds are especially valuable for planting in dry locations. There is nothing better for rock works.

Solidagos (Golden-Rod) are effective as fall bloomers.

Spiræa filipendula fl. pl., with its handsome, fern-like leaves and double white flowers, and other varieties, as *ulmaria*, *alba plena* and *venusta*, no garden should be without it. To grow vigorously they want good soil.

DAHLIA IMPERIALIS.—SEE PAGE 59

Stachys lanata will be admired planted in borders, as the silver foliage and pink flowers are very pretty.

Tradescantias grow in either dry or moist ground and have pretty flowers.

Veronicas are dwarf growers and easy to cultivate.

Vinca, of the various kinds, are good growers in any situation, being very useful for covering the ground under trees.

But not only the amateur should plant these herbaceous plants more frequently. There is money in them for the professional florists. Many herbaceous plants would very easily supply the florist in winter and early spring with useful cut-flowers and decorating material. Let us, in short, review these varieties.

Anthericum Liliago is a good pot plant for early spring.

Bellis perennis (English Daisy) is excellent for planting in boxes, pots or in cold frames, for mid-winter and early spring use.

Campanulas make good pot plants if potted late in fall, kept cool over winter and forced from 40 to 50 degrees from February on.

Convallaria majalis (Lilies-of-the-Valley) are well-known to the florist. They are easy for amateurs to force in a room. They should be kept warm and moist, no dry heat, planted in moss, and set away from light until they get three inches long.

Dicentra (*Diclytra*) *spectabilis* is one of the prettiest plants for pots, both in leaves and flowers. They can be had in bloom in February.

Funkias, especially *undulata fol. variegata*, are unexcelled for use in jardinieres. They are easy to force in a dark place until the leaves are two inches in height. Unequalled for flower arrangements and designs. He who forces them once will not fail to do so again.

Helleborus niger, the so-called Christmas Rose, flowers easily in pots or boxes in mid-winter, in a temperature of 40 to 45 degrees. The new large-flowering varieties in different colors are very handsome.

Iberis sempervirens and *Tenoreana* are nice low bushes for pots in winter.

Pæonies. If these are wanted to be forced, they should have a little frost before they are taken up. They are very decorative flowered in 10 inch pots. They need much light, and, after buds are set, frequently manure them.

Spiræas are much used for forcing. *Spiræa Aruncus* is a very showy and decorative pot plant.

The most of the named plants for forcing should go through a few degrees of frost before they are potted.

FRUITS AND VEGETABLES.

THE POMONA CURRANT.—The Pomona is a new variety of red currant, introduced by Albertson and Hobbs, of Bridgeport, Indiana. Small seeds and great productiveness are claimed for it.

PEQUEA GOOSEBERRY.—At the recent annual meeting of the State Horticultural Association of Penna., much interest was centered in a new seedling gooseberry, Pequea, some canes of which were placed on exhibition by Messrs. Mayer & Son, of Lancaster. The cause of such attention was the remarkable growth, the canes shown being 6 feet in length. Mr. Mayer said that he had seen growth on his plants 8 feet in height. No especial claim for flavor was put forth for the fruit, though it was said to be equal to any.

NICK OHMER STRAWBERRY.—Among 1898 introductions, is a strawberry, Nick Ohmer by name, for which is claimed a vigorous growth, perfect blossom, productiveness and large-sized regular fruit of excellent quality. MEEHANS' MONTHLY would be glad to record how it stands the public test. Mr. John F. Beaver, an Ohioian, is the originator. M. Crawford, Cuyahoga Falls, Ohio, is largely interested in its dissemination.

TOPPING RASPBERRY AND BLACKBERRY PLANTS.—In commercial fruit-growing it is almost a universal practice to top the canes of raspberries and blackberries when growing, in order to make them stocky and self-supporting, as this is a great saving of time and expense. The canes have their tops pinched off when about two feet high. The side shoots, which come then, add another foot or two of length before the season is over. This process gives stout bushes, which sustain themselves without any staking or support. When the winter is over the side shoots are clipped back a little, and nothing else is required.

These stocky, self-supporting canes, though bearing more berries than those not treated as these were, do not bear more weight of fruit. The largest berries come from plants let grow as they will for the season and cut back to 3 or 4 feet in early spring. Growers must decide between large berries and self-supporting plants. J.

SAN JOSE SCALE.—Oil is sure death to all insects. Like everything else, it requires to be mixed with brains when using it. Orchard trees have been known to be painted all over with Linseed Oil, killing every insect, and the trees flourished under the treatment. Others have used it, and every tree died. Speaking of the San Jose Scale, Mr. S. A. Pease, in a lecture before the California University Farmers' Institute, remarked, "Kerosene is all right,—*if you know how to use it.*" Spraying with Kerosene Emulsion kills about 80 per cent; but enough insects escape to renew the race rapidly. Fumigation with hydrocyanic gas is now resorted to. Light tents are made to completely cover each tree. Two and a half ounces of cyanide are used for each full grown orange tree. The tents are left for forty minutes over each tree. Three ounces of cyanide make a safe amount. If too light a dose be given, the insects are not all destroyed. The lecturer said one company had fumigated 1500 acres of orchards, comprising various kinds of fruits.

BIOGRAPHY AND LITERATURE.

FAITHFUL TO THE END.

The leaves that in the lonely walks were spread,
Starting from off the ground beneath the tread,
Coursed o'er the garden plain;
Thus sometimes, 'mid the soul's deep sorrowings,
Our soul a moment mounts on wounded wings,
Then, swiftly, falls again.

—VICTOR HUGO.

EDWIN DAVIS.—The Franklin Davis Nursery Co., at Halethorpe, Baltimore, suffers a severe loss in the death of Edwin Davis, who died February 3d, in his 38th year. Franklin Davis, the father and founder of the nursery, left behind him a high character for intelligence and integrity, and the son was worthily following in his father's footsteps. Two brothers are still in the company.

A. M. HAUPT MILLARD.—There are many gardeners, as well as fine gardens, in America, but it has been found difficult to get the two together in time of need. It is pleasant to note that the happy coincidence seems to have occurred in the appointment of Mr. A. M. Haupt Millard, recently superintending the gardens of Hon. J. D. Cameron, at Harrisburg, to have, from the 1st of March, the oversight of the beautiful grounds of the Hotel Lake Champlain, at Plattsburg, N. Y.

LESSONS WITH PLANTS.—The great difficulty in teaching botany in the common schools is, that neither the teacher nor the taught know what is being talked of. One of the most successful teachers of elementary botany in the public schools of Philadelphia does not profess to know anything of botany as a science. The child is simply furnished with the specimens of various plants as they can be obtained, is taught to observe and to get the name of the parts observed, to compare these parts with one another, and draw deductions from what they see. Just in this successful line is the book of Prof. L. H. Bailey, "Lessons with Plants." To aid in this common-sense method of teaching, it is timely and excellent. Every teacher should have it, wherever nature studies are appreciated. It is published by McMillan & Co., New York.

PARK AND OUT-DOOR ART ASSOCIATION.—This public-spirited organization, founded last year at Louisville, to aid in cultivating the growing feeling for public parks, has just issued its first annual report. The statistics are extremely valuable, and all interested in public squares and open places will find profit in its perusal. The report may be had free by addressing the Secretary, Mr. Warren H. Manning, Boston, Mass.

SWEET PEA ILLUSTRATIONS.—When the fever of crossing or hybridizing popular flowers takes hold of the horticultural public, the kinds selected are, as a rule, strained in every direction to produce something new and startling. After a good start is made, those who are not closely following the race easily become confused when desirous of making a good selection—it really rivals the horse trade. For facility in color-selection, Messrs. W. Atlee Burpee & Co., of Philadelphia, have had colored illustrations made of six recent introductions:—Burpee's New Countess, Queen Victoria, Prima Donna, Brilliant, Coquette and Shahzoda.

WEED LAWS AGAIN.—I notice, in the October issue, a paragraph under the above heading. There is a law, in this country, relating to the Canadian Thistle, *Cirsium arvense*. Every farmer and land-owner must, under some penalties, keep them chopped down and rooted up on their premises; not allow them to seed under any circumstances whatever. Even the roadmasters on the public roads have strict orders to keep them chopped down on the roads in their charge. This law has been in effect for some years. The people now do not pay much attention to the law, for they found out that our law-makers do not know what a Canadian Thistle is. Our highly-

educated law makers got mixed up on the common biennial, Purple-top Thistle, *Cirsium lanceolatum*, a very innocent plant. There is not a Canadian Thistle in this country.

Missouri. F. R. S.

This is just the trouble with all such legislation. It makes numerous places for ignorant employees. Popular names give additional trouble. The Canadian Thistle is a familiar illustration. The writer found recently, a package of dried plants collected in a journey towards the lakes, by Ferederick Pursh, in 1807. The package had not been opened since Pursh tied it up. Attached to a specimen of the *Cirsium discolor*, the label read "this is known to the farmers of this region as Canadian Thistle." So that, since one hundred years ago, the name has been transferred to a totally different species, which was probably not much known in Canada when the name first originated.

Love-In-Idleness.—A correspondent from Haverford College, Pa., inquires what is the plant referred to by Shakespeare as "Love-in-Idleness"? It is one of the names of the Pansy. Johnny-jump-up, is another common name. The origin of these names is unknown. Pansy is simply the French name *pensée* put into an English form. It has a similar meaning to forget-me-not, or "think of me," and is pretty and appropriate.

GENERAL NOTES.

Growing Plants in School Rooms.—The Assistant Medical Inspector of the Philadelphia Board of Health says:—"Growing plants should not be used as permanent school-room decorations; many have medicinal odors to which some children are quite susceptible, and they may serve to harbor disease germs in the dust that may accumulate about them." Only for the statement that there are "many" such kinds, one might suppose people grow poison vines for window plants. As plants absorb the carbonic acid from the children's lungs, they are nature's great purifier of bad air. It would have been as well if the learned gentleman had given a list of those that possess "medicinal" odors susceptible (of disease) to some children,—and why the dust on a live leaf should harbor disease germs more than the walls or permanent furniture, the tops of which are never dusted, might be clearer. Unfortunately, local Boards of Health are usually held as sacred as the oracles of the pagans; and the beautiful window flowers, for which so many of the public schools are famous, will probably have to go. The pretty little conservatories attached to many city homes, may next be banished; and the dust-collecting, disease-germ harboring shrubbery in the city yards share the same fate!

Winter and Summer Pleasures.—The following essay, wholly the work of a seven-year-old Missouri girl, who has never yet been to school, is submitted as a companion piece to the boy's treatise on the mole, recently printed in the magazine. Her powers of observation indicate a bright future.

"A story about summer and winter.

In the winter it is rainy and bad and the snow is on the ground soft and white. And you cant go out the house. I dont like it a bit it is very disagreeable.

But in summer you can play out all you want and have a nice time and injoy your self. Play with your dolls or jump rope or do anything you wanted to and ware muslin dresses and fan and keep cool comfortable.

But in winter you are allways hot with to much fire ore cold without enough.

Wretten by Miss Juanita Dyer."

The Wood Oil Tree.—Mr. Augustine Henry tells the *American Druggist* that the famous Wood Oil of China is expressed from the seeds of *Aleurites cordata*. It belongs to a family of oil and gum-producing plants, *Euphorbiaceæ*, of which our Castor Oil plant is a familiar representative. Like most trees from Japan and China, it ought to thrive in our country. Wood oil is derived from the fact that it excels all other for wood varnishing.

Forest Successions.—The Royal Commission appointed to report on the restoration of the White Pine forests of Canada, among other interesting facts, says, that the prevailing opinion, that when a forest is cut away trees of some other species follow, is not correct. They find White Pine seedlings following the cut-away White Pine timber in frequent instances.

ROSA SETIGERA.

PRAIRIE ROSE.

NATURAL ORDER ROSACEÆ.

ROSA SETIGERA, Michaux.—Styles cohering in a protruding column. Stems climbing, armed with stout, nearly straight prickles, not bristly; leaflets three to five, ovate, acute, sharply serrate, smooth or downy beneath; stalks and calyx glandular; flowers corymbed,—sepals pointed; petals deep rose color changing to white; fruit globular. (Gray's *Manual of the Botany of the Northern United States.* See also, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany.*)

The Prairie Rose is a distinctively American rose. As a rule, roses are so closely related that it is difficult to define the species, and those from one section are often found closely related to others that may be in localities far apart. As often noted of late, species native to the Atlantic portion of the United States are often found repeated in the flora of Japan, or closely related to some Japanese species. Even in roses, there is one Japan species identical with a species in the Southern United States; but there is nothing very closely allied to the American Prairie Rose in the Asiatic flora, though *Rosa hystrix*, of the North of China, has some few points in common with it. In another respect, it differs from other American roses in having the styles united into a single column, as well shown by the artist in the upper flower of the picture. In other American roses, the styles are separate. In its remarkably sarmentose character, or, as it is popularly called, "climbing character,"—it is different from other American roses, unless *Rosa gymnocarpa*, of the Pacific Coast, may prove somewhat of a competitor. The author has traveled through woods in British Columbia, along Indian trails, with this rose arching overhead, much as he has found the Prairie Rose in the woods of Kentucky. Again, other American roses possess a grateful fragrance, while this species is characterized as odorless. The strong, sharp bristles or setæ on the calyx and peduncle, are specially characteristic, and obtained for it the name of *setigera*, or the setæ bearing rose. Some of these supposed exclusive characteristics may possibly have to be revised as the plant becomes better known in its native localities. It is often classed as wholly scentless; but Torrey and Gray, in the "Flora of North America," properly qualifies this by the expression "nearly odorless." Florists, or at least a leading florist, the late John Feast, of Baltimore, undertook to produce a double race, and three have become popular in gardens as "climbers." They are known as Prairie Queen, Baltimore Belle, and King of the Prairies. The last named of these is quite fragrant,—and the flowers on the plant from which the present plate was prepared had a pronounced delicate fragrance. As all species of plants are more closely investigated, however, variations are expected to a much greater extent than was formerly supposed,—and variations in fragrance may be looked for as well as in any other character. It is indeed possible, that the form growing in the woods and thickets of Kentucky and Tennessee, may be found distinct enough from the form peculiar to the prairies to merit distinction, and that the two names, *Rosa setigera* and *Rosa rubifolia*, as given by the early botanists, may not be as closely synonymous, as monographers now regard them.

It may be here remarked, as part of the history of this rose, that it was first made known and described by Michaux in his Flora of North America, published in 1803. Masson, a Scotch botanist, came to America for exploration purposes, but died, in Canada, in 1805. From some of the seeds he sent, it is said in 1800, the first Prairie roses in England were raised, and it was described in the *Hortus Kewensis* of 1811. It would thus appear that, though Masson was its first collector, the length of time before it was described and published, gives Michaux's name, *setigera*, priority; unless, as it may be, that Masson's is really different from the plant of Michaux, a suggestion which any one who can compare the colored plate in Lindley's *Rosarum Monographia*, with the one given with this

chapter, and who may remember the plant as growing in Kentucky woods, will think it at least possible. There is no record of the locality from which Masson obtained his seed, the general term "North America," being all that is given in the history of his plant; but Michaux describes his as from South Carolina, and the plant here illustrated is clearly the one intended by Michaux.

The drawing was made from a plant growing on the border of a wood in Philadelphia County, Penna., in which County occasional plants have been found by the author, apparently as indigenous as any plant could be; but, singularly, not one has ever been found seed-bearing, the individual plants having evidently been there for many years,—but unless it could be that, in some former time, fertile plants had been destroyed by cultivation, infertile plants alone could hardly travel, or long maintain themselves. A safe theory of their origin in these localities can scarcely be formulated.

Authors, generally, give the species a wide range. Wood speaks of it as "The Michigan Rose," a native of Michigan and other States west and south. Torrey and Gray, "From Michigan to Arkansas, Louisiana, and Georgia," and Dr. Gray, in his "Manual," adds Western New York, indigenous?" to the list. Chapman gives the more southern locations as "borders of swamps, Florida to South Carolina and westward." Chapman gives "June" as the time of flowering in the South. In Pennsylvania, the so-called "June roses" are out of bloom before the *Rosa setigera* of Pennsylvania opens. The last week of June and the first week of July, is its season there. Beckwith's report on the Botany of his expedition notes its collection at Fort Washita,—the only species observed on the exploration.

It is remarkable how sentiment rules the world. In no way has the rose ministered to the physical wants of man. But it has reached the highest place among flowers in the affections of mankind. Poetry would have been comparatively barren had the rose not been born. American roses have not entered materially into American poetry, the nation is too young to make any great mark in distinctively American literature. But our wild roses have now and then shared in giving the poet inspiration. Bryant, the great American poet of nature, in the ode "The west wind," sings of the rose.

"Beneath the forest's skirt I rest,
Whose branching pines rise dark and high,
And hear the breezes of the West
Among the thread-like foliage sigh.

Sweet Zephyr! why that sound of woe?
Is not thy home among the flowers?
Do not the bright June roses blow,
To meet thy kiss at morning hours?"

Though it is not the Prairie Rose, that skirts the pine forest, the *Rosa lucida* being probably the one in the poet's mind; but if one might substitute a forest of deciduous trees, the Prairie Rose might well serve in the picture the poet presents.

In the borders of woods, and in open places in Missouri where tall growing shrubs or bushes predominate, the Prairie Rose adds materially to the midsummer beauty of the woodland scenery. To the author's mind, it seems more at home in Missouri than in more Northern regions. It might as worthily claim title to the term "Missouri Rose" as "Michigan Rose" which is one of its familiar ones. Later in the season, following the floral beauty, the small red hips, as the fruit is termed, enliven the appearance of the woodlands and give a charm to the landscape which endures far into the winter season. The fruit is small in comparison with that of other species of rose, especially with the species of the Old World, familiar in gardens, and again suggests a resemblance to the rose of the Pacific Coast, *Rosa gymnocarpa* already referred to.

It is remarkable that the simple beauty of this wild rose of our country, has not been more appreciated by cultivators. The hybrids referred to, are beautiful enough in their way, as double flowers usually are—appreciated more perhaps because they are double and in this way regarded as an improvement on nature; but they can scarcely equal in attractiveness the wild simple form of nature. We may rarely find a plant in gardens however. A pleasing exception might have been seen a few years ago, in the gardens known as Dosoris, the Long Island residence of the late Mr. Charles A. Dana, where an arbor was constructed especially for it, and which constituted one of the special features of the beautiful grounds.

EXPLANATION OF THE PLATE.—1. Opening flower, showing the column of united styles. 2. Older flower, changing to white. 3. Branch of a panicle with unopened buds. 4. Growing shoot for next season's flowering.

WILD FLOWERS AND NATURE.

THE ODOR OF THE EGLANTINE.

And so it is that still to-day
I cannot choose but sing.
Remain a foster-child of May
And a suckling of the spring.

That to Nurse-Nature's voice and touch
I shape my babbling speech,
And still stretch feeble hands to clutch,
Something beyond my reach:

That in my song you catch at times
Note sweeter far than mine,
And in the tangle of my rhymes
Can scent the eglantine.

—ALFRED AUSTIN.

NOTES ON ASCLEPIAS.—A South Carolina correspondent says:—"In the December issue, 1897, pages 221 and 222, with illustration, you describe *Asclepias Cornuti* as white-flowered or greenish-white. In reading, at every new line, I hoped you would speak of a variety here native, so like your illustration, Plate No. 12. But since you did not, I want to describe one native out of many—to me the most lovely here. We have *A. tuberosa*, *A. Syriaca* (or *Cornuti*) and an unknown, small, slender, one-stemmed, three-flowered, pure pearl-white variety. But my variety, which we have ignorantly called *Cornuti*, has four long, many-branched, tuberous roots, many stout stems, branching, growing fully 5 to 6 feet in height, with long, branched clusters of almost rose-colored flowers. Contrary to your species, Plate No. 12, this variety has downy leaves. The blooms open from late July until late August, side shoots forming new clusters long after the first are over. This plant is very abundant here, vigorous, long-lived. A neighbor of mine has one with an ugly, purplish-pink or magenta-colored bloom, dwarf in growth, which was bought from a florist. Can you tell me the name of the variety I have described? One big, strong, healthy plant will have from three to ten strong vigorous shoots."

Most of the species of *Asclepias* vary much among themselves. One of our leading botanists wrote, on the appearance of our plate, commenting on the slender pedicels, which reminded him of an allied species. Noting these variations has become, of late years, one of the pleasures of botanical study.

MAINTAINING COLOR IN DRIED SPECIMENS.—A South Carolinian correspondent says: "For some years past, I have been collecting and mounting specimens of the indigenous plants of this and adjoining sections. I notice that the greater portion of the highly colored bloom of plants lose almost entirely their original color when pressed, generally becoming a nut brown and, in many instances, almost black. Some fade very slowly, others losing their color in a few months' time. This is especially so with trilliums, ladies-slippers, monks-hood, hepaticas, blood-root, gentians, uvularias and many others too numerous to mention. The foliage also fades very much. I wish to know, if you can tell me, of anything used to prevent this, or partially so. I very naturally suppose, that if there is anything of this kind known, you possess the information. I would be very grateful if you can give me any information on the subject."

To preserve the colors of leaves and flowers, you must kill the specimen as rapidly as possible, and not have it die slowly between your drying papers. Some plants, like stone-crops, orchids and other succulents, will live for months, and then the leaves and flowers will rot away in dreary blackness at last,—besides throwing off their leaves and flowers, giving only a few dry sticks for one's trouble. The best way to effect this desirable taking of life, is to dip the specimen for a few seconds in boiling water. After taking from the water, the specimen may be allowed to dry a little before putting it in press.

WALKING TOADS.—*Popular Science News* notes, as something exceptional, a toad walking on its four feet instead of leaping. The writer of this has frequently noted this manner of pedestrianism on the part of the toad. It is amusing to see the old fellows trotting along on all-fours.

LEAF VARIATION. — In the note on leaf variation, p. 37, MEEHANS' MONTHLY for March, the writer says: "May we not say that it is from some local weakness in not producing material to warrant the production of leaf-blade that accounts for the absence of the ribs which results in a lobe, where, otherwise, the leaf would be entire?"

There certainly must be other cause than "some local weakness" that shapes the lobed leaves of the young branches of the mulberry. It is on the young and vigorous branches that the lobed leaves are found, hence it could scarcely be claimed to be due to a "low degree of vital energy," as the writer suggests in the note referred to.

The leaves of the young *Liriodendron* trees grow to double or even quadruple the size of those produced by old trees; but it is the leaves of the young trees which are deeply and extremely lobed. Then again, take the leaves of the Sassafras. It is claimed that those produced by the fruiting branches are entire, that the growth-energy is largely consumed by the elaboration of the fruit, hence the old time entire leaf predominates.

It is a question, therefore, what the lobed leaf does indicate,—whether a low or high degree of growth-force. The ferns, which grow so rank and abundantly back in the carboniferous age, produced, in the finely-divided frond, what is comparable with our lobed leaves of the present. Fossil specimens have been preserved in which some of the pinnæ are only partially divided; transitions between the lobed and entire form. Such transition forms are occasionally found among our present ferns.

Lubbock and others who have made a careful study of leaf variation say that the primitive, the ancestral type of leaf was entire. This statement, any one may verify more or less extensively, by studying seedling plants. It is claimed that the first leaves (succeeding the cotyledons) are typical of the ancestral form. The first leaves of the chestnuts, oaks, etc., are nearly or quite entire—those of the walnut, hickory, etc., are almost or quite simple instead of compound.

Whether leaves become cut, divided, lobed, etc., because of lack of energy to produce the entire leaf, or whether there is a significance in the lobes, points, etc., which we may better understand as studies in electricity in relation to plant-growth are more and more extended, the future will reveal.

MRS. W. A. KELLERMAN.

Columbus, O.

The correspondent who started this interesting inquiry, is now of the party exploring for the Nicauraugua Canal, on which, through his love of nature studies, he sought a place. Mrs. Kellerman's suggestions seem sound,—on the other hand, there must be local causes for the differences on the same branch. When on the fig, sassafras, mulberry, and others, we find lobed and entire leaves on the same branch, it would seem legitimate to suspect local influence.

MISTLETOE ON FIRS.—Referring to a little article published under the above heading in the February edition, I think it necessary to state that your correspondent is not entirely correct in suggesting that "Witch's Broom" or "Crow's Nest" branches on coniferous trees cannot in many cases be taken for the mistletoe, as this parasite will probably have an objection to the evergreen as host plants, probably on account of the resinous sap that most of this class of plants have.

I am able to report to have met, oftener than once, the common mistletoe *Viscum album* growing on *Pinus sylvestris*, the pine tree or fir of the European woods. I deeply regret that I have not at hand some samples at present, to send them to you together with this note; but I hope some weeks from now that I may come across them.

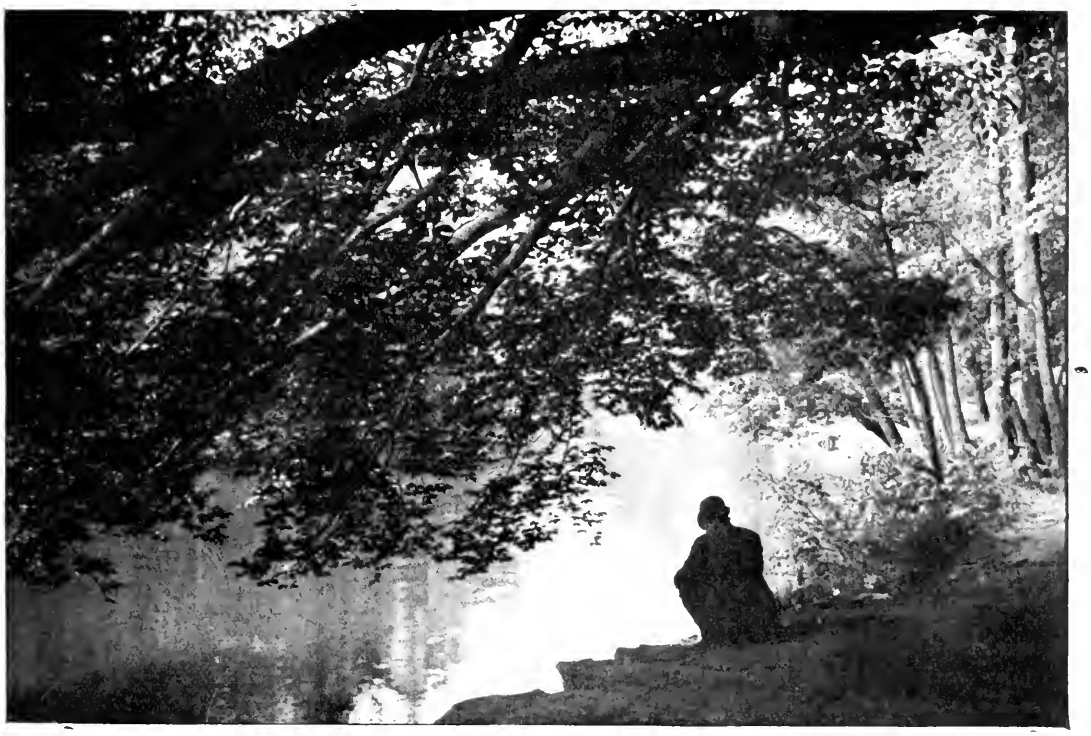
The growth of the *Viscum* differs, of course, somewhat according to the host plant they vegetate upon; and the botanists, Boissier and Reuter, found it necessary to give a special name to the form growing on *Pinus sylvestris*, which is *Viscum lætum*.

So far as it concerns the coniferous trees in North America, it is a known fact that the genus, *Arceuthobium*, is oftener met with upon them than in Europe, though some species of *Arceuthobium* have been found on *Juniperus Sabina*, *Juniperus Oxycedrus*, *J. drupacea*, etc., throughout the Mediterranean countries, extending east to Persia, and upon *Pinus excelsa* in Central Asia. M. GEBHARDT.

Erfurt, Germany.

GEOTROPISM IN VEGETATION.—Geotropism is a hard word. It means a tendency to turn towards the earth. There are many mysteries yet unsolved awaiting the attention of ambitious students. Why do some branches of trees go on steadily upwards, as in the trunk of a pine tree, and then take a notion, as some individuals do, to curve downwards and become weeping trees? How can stout, woody branches, which it would take a force of many hundred pounds to bend—branches that for years have been perfectly straight—come to curve upwards or downwards, as the case may be,—or at times simply bend down towards the earth, as often seen in curved trunks in forests, and in the downward direction of branches on hill-sides and along streams? The only answer is that there are two contending powers in vegetation,—the geotropic and the helioscopic. At times, one has the ascendency and at times the other. But this is merely re-stating an obvious fact. It explains nothing.

All that we are doing, now, is to represent a beautiful scene on the lovely Wissahickon, on which the branches of a beech tree, almost erect in the early stage of the life of the tree, have come to an affection for the naids in the stream. For the present we must set philosophical speculation aside, and admire the picture for its own sake.



A SCENE ON THE WISSAHICKON.

REGENERATION IN VARIEGATED LEAVES.—Miss Bessie L. Putnam, of Harmonsburg, Pa., sends some leaves of the variegated abutilon which present some interesting puzzles to the biologists. In this variety, the lobes of the leaf are regular in outline, the yellowish white variegation bordering the leaf. But in some instances, the lobes are deformed by the addition of green, ear-like appendages, projecting beyond the white borderings. In these cases, the serratures of the normal leaf disappear along the lines of the additional portion. This may afford a clue to those who love to work out the causes of these aberrations. The principle affecting the variegation of leaves can be communicated by inoculation.

GENERAL GARDENING.

JACQUEMINOT.

The roses at her supple throat
Were opening to their coming close,
With those deep tinges which denote,
The coloring of that reddest rose,
——The Jacqueminot * * .

—ERNEST MCGAFFEY.

MAKING WALKING CANES.—Possibly few matters brought to public notice through MEEHANS' MONTHLY have attracted more attention than the suggestion to combine amusement with instruction in the matter of making walking canes out of living plants. The Honorable J. Sterling Morton, formerly United States Commissioner of Agriculture, says:—"I was very much pleased with the paragraph upon "Curved Trees," which are very interesting to me. For some years, at Arbor Lodge, in Nebraska, I experimented in the curving of trees, and among other *curios*, have now an elm tree which shows that in its infancy I braided together, in three strands, three twigs which have since become united in a single, three-braid limb.

There are great possibilities in the matter of curving, into curious forms, growing trees—both forest and fruit."

A pretty employment for young people may here be suggested. Nothing could be more grateful than to receive, as a souvenir, a cane actually worked out for use by the friend who gave it. In this strain, a correspondent writes: "For many years my father carried a cane, given him by one of his grateful patients, that, when growing was twined about with a large grape vine, making the grooves wide and deep."

SCALE INSECTS.—The boy in Æsop's fables cried wolf! wolf! when there was no wolf. Nobody helped him when the real wolf came. In our own country, State after State has been quarantined against the San Jose Scale. Germany has thought there was something more in this than a mere cry to get appointments for useless inspectors. So Germany started a quarantine on its own account. Scale-infested fruit has been yellow-papered. Germany is now told we were only in fun. There is nothing the matter with the fruit. But the truth is, the Scale doesn't need looking after,—not by law, for the scale will travel in spite of all law, and its useless expenditures,—but by encouraging cultivators to look for them and destroy them. It is as sensible to make laws that there should be quarantines against weeds, as against insects. Like love, they laugh at locksmiths.

LICORICE.—Licorice has been grown for a number of years, in California, in a limited way, on the light, silty soils bordering a section of the Sacramento River. The plants grow rampant and are a nuisance to get out of the ground, when established. No system has been followed in its cultivation and harvesting and it has not proved profitable as a haphazard crop. Ramie roots are in plenty in California, your correspondent can have a wheelbarrow load from my garden for the taking.

EMORY E. SMITH.

University of California.

AQUATIC CULTURE OF CANNAS.—M. Molin, horticulturist of Lyons, has produced wonderful Cannas as a result of cultivating them in water. They were first planted in a basket and then sunk in a pond. The roots were not long in breaking through the rush switches which seemed to hold them fast. An extraordinary, strong foliage and marvelous flowers were the result.

—From *La Semaine Horticole.*

ORANGES AND OLIVES —Official figures must sometimes get stale. Referring to some recently reproduced in this magazine, the California *Fruit Grower* says that Riverside, in that State, has some 12,000 acres in oranges, two-thirds of which are of the Bahia or Navel variety,—and, as to olives it is estimated that there are 45,000 acres on the Pacific Coast devoted to olive orchards.

THE ELM CITY.—Every one knows New Haven, Connecticut, as the Elm City. Few can appreciate the beauty these trees give this place, celebrated as it is in so many ways. The illustration below represents one of its avenues taken from a photograph kindly furnished by Mr. Felix Chillingworth. The trained landscape gardener will regret that half the trees were not removed in their earlier stages of life. Beautiful as the scene is now, it would then have been transcendent. Still, tree-lovers are thankful for the share of beauty that has been fortunately preserved for us. It is the White Elm, *Ulmus Americana*.

FERNS FOR A SMALL BORDER.—Among the most suitable plants for small borders, ferns may be mentioned. Nothing can be much prettier than a thriving bank of ferns,—and such a sight is easily possible—so easy, in fact, that it is strange our smaller residences are not more frequently seen with such surroundings.

The best effect can be usually had in a spot shaded from the sun when at its height,—say on the northeast side of a house,—for there is to be found the most moisture. All ferns do not require a great deal of moisture, but it does seem as though the most slender and

A SCENE IN THE ELM CITY.

graceful do prefer it, and that is the class that is so effective. If the front of the house is toward the desired exposure, so much the better, as there is likely to be a porch, along which these moisture-loving ferns will grow easily, as naturally, there the soil will not dry out as readily as would that close to the wall of a house.

The preparation of the bed to receive the plants is a comparatively easy matter. Bear in mind that you want to have the condition of soil as nearly as possible like that from which the plants are to come—light, deep and cool. Most persons are within reach of some little patch of woodland, and it will repay them to make a trip to such a place and bring away some of that rich, light soil which is made and annually added to by the fallen leaves of the forest. But if this cannot be made convenient, don't consider the planting useless, by any means, but fork up the bed to the depth of a foot or more, breaking it up fine, add a little fine manure, if it is to be had conveniently and it is thoroughly rotted, and the bed may be considered ready. If the soil is inclined to be very heavy or clayey, add some fine stones, broken bricks and a good lot of sand to make it more porous. After the planting is accomplished, cover the soil with a good mulching of leaves.

If this mulching is repeated year after year, the soil will soon become like home to the plants, and they will respond to the treatment in a way that will reward for the little labor spent. A very heavy, wet mulch in winter is not desirable—particularly for evergreen species.

The selection of plants for the bed may depend somewhat on what may be convenient to get. Those who can spare the time will delight in gathering the plants from the woods, or they are readily purchased. Of those to be found in quantities near Philadelphia (readers from other sections are better able to supply lists suitable for their location than could be furnished by the writer), are the Cinnamon Fern (*Osmunda cinnamomea*); the Royal Fern (*Osmunda regalis*)—rather scarce; *Asplenium thelypteroides* (Silvery Spleenwort); *Aspidium spinulosum* (Spinulose Shield Fern); *Onoclea sensibilis* (Sensitive Fern)—combines well if used in small quantities, as its broad fronds are not as graceful as most ferns; *Aspidium marginale* (Evergreen Wood Fern); *Asplenium Filix-foemina* (Lady Fern); *Asplenium acrostichoides* (the well-known Christmas Fern); New York Fern (*Aspidium Noveboracense*); *Polypodium vulgare* (Common Polypody); the foregoing list graduates from tall ones to the short in the order named.

Three others should be mentioned, but they are more suitable in a little rockery of their own,—*Polypodium hexagonopterum* (Triangular Polypod); *Adiantum pedatum* (Maiden-hair Fern); *Asplenium ebeneum* (Ebony Spleenwort). The following, which can be placed with those first mentioned, and which are likewise graded according to height, are readily purchased if they cannot be collected: *Onoclea Struthiopteris*, the graceful Ostrich Fern, a very tall grower in wet soil; *Osmunda Claytoniana*, Flowering Fern; *Aspidium Goldianum*, Goldie's Fern; *Woodwardia Virginica*; *Asplenium angustifolium*.

The following, of those above mentioned, are evergreen, and may be placed where their presence in winter would be appreciated: *Aspidium spinulosum*, *A. marginale*, *A. acrostichoides*, *Asplenium ebeneum* and *Polypodium vulgare*.

The Brake or Bracken (*Pteris aquilina*), famed for its poetical connections, has become well naturalized, and is frequently found occupying large areas. Its rapid-spreading nature does not permit of its general use in cultivation.

The roots may be easily transplanted in spring, summer or fall, though if in the spring or early summer, an effect may be had the first season.

Syringe the foliage well, just as with other garden plants, every day during the warm months, and a charming bed will be the result.

THE CONFEDERATE JASMINE.—It is to be regretted that some flowers, which would be household pets, are burdened with very hard names. One of these is the *Rhynchospermum jasminoides*, now also known as *Trachelospermum*. As a pot or tub plant for the decoration of summer gardens, few things are more acceptable; and in the South, where it is free from frost, or nearly so, it is one of the most desirable of hardy climbers. The white, waxy flowers have a delicious odor. The odor is even more agreeable than that of the jasmine. Mrs. Drennan says, in the *Southern Florist*,

that it is known through the South as the Confederate Jasmine. She speaks of it as being in perfection in April and May; but in gardens about Philadelphia, grown in pots for summer decoration, as already noted, it is at its best in July.

THE BLACKBERRY AND GRAPE—ORNAMENTAL AND USEFUL.—It is an excellent idea furnished in the January MONTHLY suggesting blackberries for ornament. Many times I have walked in a garden where plants and shrubs were blooming, and from not one of them could be picked a plum or berry to moisten thirsty lips. Beauty we must have, but let there also be utility.

How very attractive is the Bitter-sweet vine; yet a grape vine, with its purple clusters would be as graceful, and further be refreshing at times.

Victor Hugo made one of his characters say: "The beautiful is as useful as the useful and sometimes more so." E.

A HYBRID ORANGE.—It is said that plants have been raised in the gardens of the Department of Agriculture at Washington from the hardy orange *Citrus trifoliata*, and the common orange of commerce.

NEW OR RARE PLANTS.

UMBRELLA CHINA TREE.—What is known in the southern portion of our country as the China tree, is, botanically, *Melia Azederach*, a native of the East Indies. Though it is said to be from the Himalayas, it will not endure much frost. Azederach is the common name by which it is known in India. It is a very ornamental tree. A form has been produced which has a strikingly dense habit, and reproduces itself from seed fairly well. It is known in the South as the China umbrella tree. The accompanying illustration is furnished by Reasoner Brothers, Oneca, Florida.

UMBRELLA CHINA TREE.

HILLS OF SNOW HYDRANGEA.—Under the heading of "New or Rare Plants," I note that you say "that MEEHANS' MONTHLY, freely offers its pages to the discussion of new plants." I have a new plant, but was afraid to write anything about it for fear that it may have the appearance of a free advertisement, which was undesirable. I am propagating it, and when I have enough plants, ahead, will dispose of it. This plant is a hydrangea. Its parent is *H. arborescens*, and is an everbloomer. I have named it Hills of Snow. It begins to

bloom the last of May and blooms straight along until stopped by the frost. Its bloom is terminal and consists of convex cymes ranging from four inches in diameter to ten and twelve inches. This plant is water loving. It requires a cool place on the north sides of buildings, or northern exposures and shade. It would not answer on the south side of a house unless it had plenty of water and shade. The shade keeps its large, veiny leaves dark green; the sun yellows them and takes away the beauty of its foliage as well as the large size of its cymes. It blooms on year-old plants and on rooting cuttings.

F. K. STEELE.

Festus, Jefferson County, Mo.

A photograph came with this note, showing the ordinary inconspicuous fertile flowers turned to barren ones, as in the Chinese Hydrangea and the *Hydrangea paniculata grandiflora*. It will be an interesting addition to the list of ornamental flowering shrubs, and should be as popular as the varieties named above.

PHYSALIS FRANCHETTI.—The recent notes on Physalis Franchetti have been especially interesting to me, as I have been growing the plant since its introduction by Messrs. Veitch, two or three seasons ago. My experience with it, is, that it is a very welcome addition to the herbaceous border.

The first year having been grown from seed, it was very late in the fall before any of the fruit colored, and those we potted and brought into the greenhouse, did not seem as if they were to be of much use as an ornamental plant.

The next year, the roots having stood our winter without any protection whatever, the plants made a vigorous growth and in late summer and up till killed down by severe frost, were a perfect mass of beautiful rich colored "lanterns."

Many people admired the large bunch exhibited in my collection of hardy perennials at the American Institute Fair in Madison Square Garden last autumn.

I think if your correspondent, L. C. L. Jordan, or his neighbor, will give it another year's trial, leaving the roots just where they were last season, thin out the smaller shoots and tie up the stronger ones, so that the mass will not be too thick, they will be rewarded with bright colored, large fruit; and as the fruit hangs on to the stems all winter, if not cleared away, there is no danger of it becoming a garden pest like some of the native varieties.

As a preserve, the fruit has no comparison with *P. Alkekengi*, or even the native *P. viscosa*. I tried the variety catalogued as *P. Japonica* last season, but it proved of too little value to be grown for the fruit, and no value whatever as an ornamental, so that it was at once discarded.

JOHN W. DUNCAN.

Greenwich, Conn.

Ann B. Branson, Clear Brook, Va., after one season's trial of the *Physalis* under discussion, is disappointed in the results of her plants. They were planted in pots and carefully tended out-of-doors during the summer, but yielded no fruit. From the way the plants rooted in the pots, she is confident that the plant would prove a troublesome occupant in any garden, and she would not recommend any one to plant it out in open ground.

While the conductors of MEEHANS' MONTHLY have not had the plant under trial further than recent seedlings, they are not inclined to give up the plant without a thorough hearing. They do not fear a plant that spreads rapidly at the root as much as one whose seeds scatter and produce plants far and wide. A root-spreading plant is easily kept in check by hoeing off the young growth as it appears above ground in its growing season. No plant can stand several cuttings like this when the foliage is needed to support the plant. If this *Physalis* will produce the colored fruit, which is undoubtedly brilliant and ornamental, it is worth a little trouble in keeping it in check.

From all accounts, it is not satisfactory in its fruiting character the first year. Let us hear more from those who have had it the second year.

Physalis Japonica, Mr. Jordan says, was introduced by Mr. Burbank, but not disseminated by him. He says it is larger than *Franchetti* in growth and fruit and very productive. The plant is coarse and by no means ornamental. He further says of *Franchetti*, that a person of great experience describes it a "perfect nuisance; never fruits (where he is) and is a weed."

It does seem that this novelty needs the light of further experience.

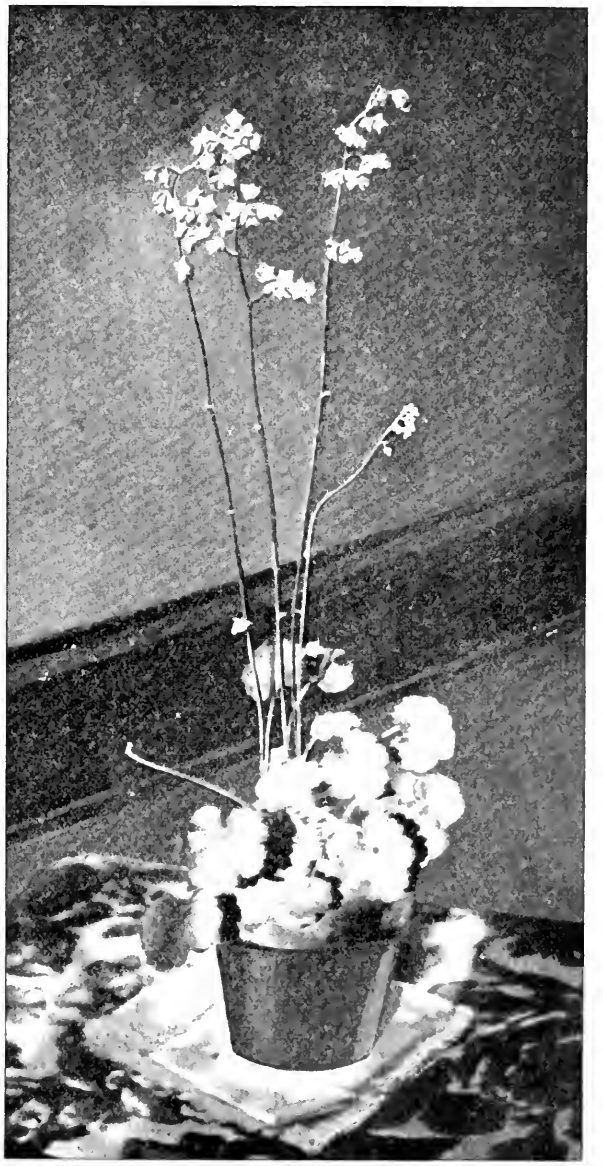
THE HARDY FLOWER GARDEN.

HEUCHERA SANGUINEA.—The pretty *Heuchera sanguinea* is one of the most delightful of hardy herbaceous plants. Though discovered long since in New Mexico, it has but recently been introduced into gardens. Most of the great family of Saxifrages have white or yellowish flowers,—and this bright red form is therefore more welcome. The plant figured is from a plant flowering under glass in winter time, and it has therefore a sparser appearance than when grown in the open ground; but it shows well the general habit of the plant. It is a perpetual bloomer, and forms a bright spot in the border, though small.

DAY LILIES.—B. G. Stillman asks "why do my Day Lilies produce no flowers? They seem in a thriving condition." If they have had plenty of food, there should be no difficulty in flowering them. Sometimes in very deep shade they do not flower as well as when partially exposed to the sun.

BOCCONIA CORDATA, THE PLUME POPPY.—One of the many delights to those whose interest in plants carries them beyond research for purely practical information, is the comparison of plants in relation to kinship. And especially is it interesting to the amateur when he comes in contact with some genus—new to him—that is related to a familiar plant in the same family. As an instance of this, the case of the *Bocconia* may be cited. How many persons who are familiar with this plant know that it is a member of the poppy family, *Papaveraceæ*? Yet this is a fact; and it is known by some as the Plume Poppy, because of the relation. To the average eye, there is no resemblance to a poppy,—and indeed, there is little, even botanically. When broken, the stems emit an orange-colored juice, similar to the well-known Bloodroot,—*Sanguinaria*,—which is also a member of this family. The poppy from which opium is made, *Papaver somnifera*, also emits a juice, but it is white in color, and it is this, dried in the sun, that furnishes the drug.

While the *Bocconia* is, under proper treatment, a very tall grower, frequently attaining seven and eight feet in height, its stout stems are entirely herbaceous. Its leaves are large, lobed, and make a good effect. The white flowers are individually small and inconspicuous, though as they are grouped in good-sized, terminal panicles, they show fairly well—sufficiently to make it, with its foliage, an interesting plant.



HEUCHERA SANGUINEA.
(Flowers Blood-red.)

The roots are of an unusual appearance in in color and shape, the former a counterpart in resemblance of the juice previously described. This portion of the plant is likely to prove obnoxious if the gardener is not watchful, as it developes with extraordinary rapidity, but it furnishes a good source of propagation, one year shoots, if potted and grown on in the fall, blooming the following year.

Within recent years, a flesh colored variety of *cordata*, *carnea*, has been introduced, but for some reason has not become popular. Doubtless a clear white color contrasts best with the foliage, and hence the lack of popularity. Can anyone relate personal experience with it? *B. cordata* is frequently seen written with *Jedoënsis* attached, but that is a mere synonym, the species having once been separated to *Macleya Jedoënsis*.

FRUITS AND VEGETABLES.

DEEP SOIL FOR VEGETABLES.—The agricultural Editor of the *Toronto Globe* says :—

"Double the crops can certainly be obtained from ground loosened in this manner, as MEEHANS' MONTHLY states, but this is not understood by the ordinary cultivator. Those who are engaged in the culture of the beet, especially, know that land is always doubled in value when sub-soiled—that is to say, when the under surface is deeply loosened. It is now well understood that a pulverized soil will hold air and moisture, so necessary to successful culture, to a much greater extent than earth that is packed solid, so that air and moisture cannot be retained. In the dryer weather, plants will not grow and flourish when under ordinary shallow culture. The plants struggle along and appear tired of life."

Here is another way to look at it.—"I am a great lover of new things, new ideas, new theories or new ways of doing old things. I love to keep up to the front—'to keep well up to the rack, fodder or no fodder'—I have not much patience with people who will hold on to the old in preference to the new, because the old they have tried, the new they are afraid to try, so they condemn the new. Try all new things as they come along and hold on to the best, is my motto, and let the old things go if the new are better. Trenching soil for grapes has passed away, with me, never to return. I have learned a better way. Deep loosening of the soil for garden purposes has had its day with me. Why loosen the soil deep? It is for the purpose of obtaining moisture. The gardener quoted on page 44, who dug deep whilst sluggards sleep, who made two acres of land where only one stood before, did not know where he was. Ignorance is considered a virtue if one only digs deep. If this gardener had plenty of water (and water is so easy to obtain nowadays) and understood how to make use of it, he would have stopped digging deep. An abundance of water coupled with modern ideas, how to make use of it, will forever bury trenching and deep digging or loosening of sub-soil—bury it clean out of sight with never a return. I am willing to take the 6, 7 or 8 inches of top soil of an acre and spread it out on a rock or plank, and then with a good head of water make better crops right along than that painstaking gardener, who dug so deep, could possibly make. Of what use is it to emphasize an old thing—an old way—which has had its day. Let it rest in the old-time musty books of the past generation and let us old people join the young generation and swing along the new things which are bursting forth like the buds on the seedling trees. I am hinting at the pent up waters which rest on every hill-side, or will rest on every hill-side just as soon as the famous, gardeners, horticulturists and land diggers catch on.

How are plants grown generally in hot houses? Six inches of soil on a plank,—heat below and above and plenty of water. Where does deep digging stand here? Will deep digging make beets grow any better? Will it make beans any tenderer? Will it make strawberries any juicier? No! Let us stop talking and writing about deep digging for plants. Deep digging is all right at Klondike. F. K. STEELE.

Festus, Jefferson County, Mo.

Mr. Steele's paper is a good illustration of the maxim that there are exceptions to all rules. Water is all right when it can pass readily through the soil; but if there is no hole in the flower pot, so that the water cannot pass away, it would be an evil. There would be no use, certainly, as he says, in deepening soil that is naturally well underdrained.

THE CURRANT OR GOOSEBERRY WORM.—At the first appearance of the destructive Currant Worm, prompt action is necessary if complete relief be desired, as the voracious appetite of this pest is wonderful, and the plants are rapidly denuded of their leaves. Probably the best remedy is White Hellebore, which may be used without fear of injury in its contact with the fruit. It may be applied diluted in water and syringed on the leaves ; or the plants may first be syringed with water and the powder dusted over them,—or the latter following a rain. For a small number of plants, the powder dusted will perhaps be found the best, as it seems to attach itself more lastingly to the leaves. A second application, about ten days after the first, will usually be found necessary. In the course of an hour after the applications have been made, the ground will be found covered with the dead or dying worms, and the bushes entirely abandoned.

DECAY OF IMMATURE PLUM FRUIT.—THE CURCULIO.—The signs of attack of the Curculio and the course to be pursued for its riddance are well known ; but continued inquiries, as to the cause of decay of immature plum fruit, show the necessity for repetition. The chief enemy of the plum is the insect curculio, and its ravages for a while caused a cessation of planting this fruit in many sections ; but with a little attention, such as all fruits will require, serious trouble can be avoided and perfect fruit had. Perhaps the oldest plan for ridding the trees of the pest is to violently jar the trees, with a small, padded log, from time to time after the leaves have appeared, when the insects would first appear. A sheet arranged beneath the trees catches the insects that fall by the jarring, and they are thus collected and destroyed. At this period, the mature insect, in the form of a beetle, is at work feeding on the leaves. If let alone, the real destruction is begun as the fruit is set, when eggs are deposited therein in great numbers,—it is said at the rate of ten a day by each female.

Even in small, private orchards it is now being found advantageous to resort to the spraying of all fruit trees, and by many it will be found equally convenient to use this method of destroying these insects.

A solution of the well-known Bordeaux Mixture and diluted Paris Green would be effective in this case and would at the same time act upon any fungus that might be present. Many of our private gardens lack the plum, one of the most delicious family fruits, merely because of this little difficulty, which is really not as great as is usually considered.

The advent of the Japanese varieties, which have not thus far been found out by the Curculio, has, to a degree, lent encouragement to the planter ; but there are some of the old varieties that could not be well replaced, and it will be found profitable to give a little care to them rather than sacrifice their good qualities.

RHUBARB.—Rhubarb is a large commercial article in Northern Asia and Europe. The *Retail Druggist* says, of the Chinese article :

"The best rhubarb purchased at Kiachta grows on a chain of rocks, lofty, and but sparingly provided with wood, which lie North of Selin, and stretch as far as the Koko-Nor. The good roots are distinguished by large and thick stems. They are dug up in April or May, immediately cleansed from the soil, and hung on the neighboring trees to dry ; then wrapped up in woolen sacks, carefully preserved from the least humidity, and transported upon camels to Kiachta "

SPRAYING MIXTURE.—Everyone now fully understands the value of spraying as a protection against injurious insects and fungus enemies. A spraying machine is now as necessary an article of garden furniture as a spade or a hoe. For fungi take two pounds of quick lime slaked in twenty gallons of water, and three pounds blue vitriol in two gallons water. Strain the lime mixture through burlap into the blue vitriol water, mix and use with spray pump for all fungous diseases of plants and trees. If it is desirable to kill insects also, add one-quarter pound of Paris Green to this.

THE BEST TOMATO.—Captain Hollister, of Alton, Illinois, reports that only purple tomatoes are popular with the people of St. Louis. The Trophy is still regarded as the best early, and the Buckeye State is the best for a late continuance of the crop. First-class late tomatoes are as profitable as early ones.

BIOGRAPHY AND LITERATURE.

THE MAYPOLE.

Happy the age, and harmless were the days—
For then true love and amity were found—
When every village did a maypole raise,
And Whitsun-ales and May-games did abound
And all the lusty younkers, in a route
With merry lasses, danced the rod about.
The friendship to their banquets bid the guests,
And the poor man fared the better for their feasts.

—PASQUIN.

STUDENTS' HAND-BOOK OF THE MUSHROOMS OF AMERICA.—By Dr. Thomas Taylor, Washington, D. C. Part 4 and 5 of this beautiful work has appeared. It will be a standard work of reference for all matters connected with fungi, either edible or poisonous. The price is but 50 cents per part.

SAMUEL PARSONS, JR.—Mr. Samuel Parsons, Jr., for fifteen years Superintendent of Parks, New York City, and Mr. George F. Pentecost, Jr., have announced their intention of prosecuting the profession of Landscape Architecture. Mr. Parsons' long experience in park work will doubtless prove valuable to any one requiring the services of a Landscape Architect.

KATSURA TREE.—In cases where the botanical names are more difficult to remember than the vernacular, it is pardonable to employ the common name for every-day use. A few years ago, a very pretty, hardy tree from Japan was noticed, under the name of *Cercidiphyllum Japonicum*. The Japanese name for this is the Katsura Tree. Many will prefer this name to its botanical one.

WISTARIA OR WISTERIA.—Our New Hampshire correspondent is not satisfied with the explanation given that, as Nuttall states, he named Wisteria after Dr. Caspar Wistar, the evident mistake in the spelling should be corrected. It may be said, in favor of that side of the case, that botanists are not unanimous as to the propriety of correcting such errors. Nor are the authors always consistent. Though "Index Kewensis," which, from its very encyclopædic character, must be in general use in offices, while correcting Nuttall from *Wisteria* to its intended form *Wistaria;* does not correct *Ailanthus* to *Ailantus* as the author evidently intended to write it. Britton and Brown, however, would side with our correspondent. They spell *Vagneria*, as "in honor of Wagner," and hold to *Wisteria* as Nuttall printed it.

Though MEEHANS' MONTHLY cannot see how a person can be honored by mis-spelling his name, our correspondent is certainly in very good company in the position held.

If Nuttall had lived till a new edition of his book should be called for, he could have corrected *Wisteria* if it had been a typographical error; or given some reason not now apparent, why he did not spell *Wisteria* as Dr. Caspar Wistar would surely have insisted on.

THE PLANE TREE IN WASHINGTON, D. C.—*Platanus orientalis*, in Washington, is one of the best all-around street trees. The first planted in the District, as far as I can learn, was the one that we now call Thaddeus Stevens memorial tree. At his suggestion, two stalwart contrabands planted it on the bank of the Tiber, in the Botanic Garden, the arching of which caused its removal to Lincoln Square, where it stands a gem, occupying the center, with its branches on the ground, shading its stem in a natural manner.

Frederick Law Olmsted, a man endeared to every lover of trees and landscape art, has used this tree with fine effect on the east side of the Peace monument. We planted the *occidentalis* on the west side of the same circle. He has also, after the manner of the ancient Romans, who were great admirers of this tree, planted the two western approaches to the Capitol with it. They are beginning to bear seed, and will soon be disseminated over the whole country, and thus tested where they will thrive. Evelyn's Sylva has some interesting stories about this tree.

W. R. SMITH.

PRIMULA VERIS (PRIMROSE.

Lovely flower,
Art thou so early
Once more among us?
Fondly I greet thee,
Primula veris!

Lighter than all the
Meadow's fair flowers,
Gently did'st slumber
Lovely flower,
Primula veris!

Only perceived by
Thee, the first gentle
Whisp'rings of wak'ning
Spring, did entice thee
Primula veris!

Once in my heart so
Sweetly was blooming,
Brighter than all the
Flowers of Cupid,
Primula veris!

Lovely flower
Primula veris,
Flowers of faith, I
Wondering call thee;

Heaven's first glance thou,
Trusting with fervor,
Speedest to meet, e'en
Open'st thy breast to't

Spring now appeareth,
Although the nipping
Frost, and the dreary
Fogs may revail it—

Flower thou believest,
That the long wished for
Heavenly Spring, hath
Made its appearance.

Open'st thy breast to't;
Wounded thy heart is,
Frosts that are painful,
Fatal—have pierced it.

Though it may wither,
Still the bright flower's
Spirit so faithful,
Never can perish.

—N. D. Wineman's translation, from the German, by L'enau.

DAHL AND THE DAHLIA.—Chamber's Encyclopædia of date, 1889, says, that the dahlia is a native of Mexico, and all the two thousand varieties are derived from two species, *Dahlia variabilis* and *D. coccinea*, but chiefly from the former. The name was given in honor of Dahl, a Sweedish botanist, but because another genus of plants had received the same name, an attempt was made to change it to Georgina, which is sometimes used on the Continent, but Dahlia universally prevails, both popularly and among botanists in Britain.

Dahl being a pupil of Linnæus, and the dahlia being named for him, it was associated with the following, which, thanking Georgina, for the reference, is here quoted from Mrs. Lincoln's Botany.

"Kalm, a pupil of Linnæus, whose name is given to the Kalmia (American Laurel,) spent three years in America, and returned to Europe laden with botanical treasures; the sight of the American plants brought by his pupil, many of which were entirely new to him, is said to have produced such an effect upon Linnæus, that although lying ill of the gout, and unable to move, his spirits were rekindled, and in the delight of his mind he forgot his bodily anguish and recovered from his disease."

It is elsewhere stated that the four last years of the life of Linné were years of mental and physical suffering. MRS. E. E. ORCUTT.

San Diego, California.

POEMS.—By Florence Earl Coates, published by Houghton, Mifflin & Co., Boston.

Our readers have occasionally enjoyed verses from the pen of Mrs. Florence Earle Coates. It is a pleasure to know that she has been induced to make a selection of one hundred, and that they have been issued in book form. They are characterized by a deep love of nature, and pay exquisite tribute to human affections —the essence of true poetry. The lover of the ancient classics will be especially delighted. After reading Mrs. Coates' version of the transformation of Hylas to a frog, one may hardly look on this amphibian without pity.

"That Hylas, once so ready to aspire,
There harshly croaked, contented in the mire."

TO STUDY AMERICAN FORESTS AND FOREST TREES.—The richness of our list of American species of trees and shrubs is more than ever attracting attention in the Old World. Mr. Rehder, who is one of the editors of *Moeller's Deutsche Gartner Zeitung*, will spend the whole spring and summer in studying them in our country, and has probably arrived before this meets the reader's eye. He will make the Arnold Arboretum, at Boston, his headquarters, and trusts to visit many portions of our country before his return to Germany.

GENERAL NOTES.

CAMPHOR USES. — Camphor is extensively used in the manufacture of explosives and celluloid, and for which purpose there is said to be an increasing demand.

A CANNA DISEASE.—It is stated in a recent bulletin of the Trinidad Botanic Gardens, that a yellow rust has appeared on a certain strain of Canna from Brazil. The disease is claimed to be of a very deadly nature and difficult to overcome.

POPULAR BOTANY.—Mr. Edward Reagan, gardner to L. A. Thebtaad, Esq , of Morris Plains, New York, gave an address recently before the Gardeners' Club of that city, which has attracted considerable attention. The popular love for botany has been injured by the abstruse position it is made to occupy in colleges and learned institutions. Addresses, like that of Mr. Reagan, do great service by showing that little more learning is required for an intelligent interest in botany than for growing a crop of potatoes.

FOREST FIRES.—The following is taken from the *Press*, of Newport News, Virginia :

"A traveler, who had occasion to make an encampment on a ledge of rock in an unbroken forest, asserts that he witnessed the beginning of one of the most destructive forest fires that ever occurred in that region. A dead tree of enormous size blew over and lodged against another tree, which it bent almost in the form of a bow. The fierce wind swayed the top of the bent tree which supported the trunk of its fallen neighbor. It so chanced that there was a space of several feet where the fallen tree was smooth and rested on the other. The force of the wind in sweeping the bent tree back and forth soon ground the bark from the trunk of the tree. The friction caused by this grinding developed a high degree of heat, and the tourist, to his astonishment, saw the wood of the dead tree burst into a flame. The top was soon consumed and fell, scattering burning embers upon the dry leaves for some distance around. These fanned to a flame by the wind, soon created a fierce fire that swept over miles of valuable timber."

ATTAR-OF-ROSES.—Why should not Attar-of-Roses be produced in this country? The process is simple, the outfit inexpensive, and the price of the output uniformly large. It nearly all comes from such countries as Bulgaria, Persia and India, where chemical skill is unknown, except as something entirely in the heads of foreigners. It seems certain that modern inventive skill might devise a more satisfactory and cheaper way of separating the oil than the distilling process. G.

Merchantville, New Jersey.

CURLING PEACH TREE LEAVES.—In many sections, peach tree leaves are disfigured by the early leaves becoming blistered, curled, and apparently covered with a powdery substance. This powdery material constitutes the fungus parasite known as *Exoascus deformans*. A tree which loses its early leaves always suffers in vital power,—that is to say, it loses ability to resist other depressing influence. It is said that the tea plants of China have to be replaced every ten years, on the average, on account of the loss of leaf power through the continual deprivation of their leaves. When the peach blister first appears on the foliage, no time should be lost in spraying with copper solutions.

ANNUAL EXPENSES OF ROYAL HORTICULTURAL SOCIETY.—It will fill any American with amazement to examine the "Annual Revenue and Expenditure Account of the Royal Horticultural Society for the Year of 1897." The "Establishment Expenses," which include salaries, printing of journal, etc., 1,960£ 14s. 3d. Shows, meetings, prizes, etc., cost, 1,494£ 11s. 8d. The total expense, including that of Chiswick Gardens, is 5,481£ 6s. 3d.

On the contra side, 3,824£ 12s. 6d. are received by annual subscription; Shows and meetings bring in 1,528£ 11s. 5d. Other amounts make up the remainder of 6,303£ 13s. 7d.

The membership numbers several thousand, having increased by 325 during 1897.

MONUMENT TO JEAN LINDEN.—Few men have done more for horticulture than the intrepid explorer, the late Jean Linden. It is proposed to erect a monument to his memory. Subscriptions may be sent to Comte O. de Kerchove de Denterghem, President,—or to Q. Lubbers, Secretary, Brussels, Belgium.

AMPHICARPUM PURSHII.

PURSH'S AMPHICARPON.

NATURAL ORDER GRAMINEÆ.

AMPHICARPUM PURSHII, Kunth.—Culms tufted, erect from fibrous roots, naked above; leaves lanceolate, rather thin, clothed, like the sheaths, with spreading, rigid hairs; upper flowers in a strict panicle; those at base of the culm perfect; grain ovoid-oblong, terete. Culm one to three feet high. Glumes of the upper flower five-nerved, of the lower one white, many-nerved. (Chapman's *Flora of the Southern United States*. See also, Gray's *Manual of the Botany of the Northern United States*, and Wood's *Class-Book of Botany*.)

Although there are possibly some five thousand species recognized as composing the order of the grasses, there are but few that could be popularly distinguished as having special attractions over others. To the popular mind, a grass is simply grass and nothing more. A few have been gathered together, by florists, under the name of ornamental grasses,—some to be admired for their size and grandeur, and others for their plumy panicles or showy forms. Narrow, green leaves are indeed characteristic of the whole family, and when the term *graminifolia* is used by descriptive botanists, no one fails to understand what the grass-like leaf should be. But if grasses fail to attract by reason of a certain monotony in general form, they compensate the lover of nature by variety in detail which might almost be termed infinite,—and will often present cases of great beauty. The one now illustrated, *Amphicarpum Purshii*, is a good instance of this. There are many plants with showy corollas that could not permit of such a pretty picture being formed as this presents. But those who can command a good pocket lens find a rich treat in studying the grasses. When one has formed a taste for their close study, few sections of the vegetable kingdom afford more pleasure.

In human economy, mankind would be badly off but for the grasses. All of our cereals,—wheat, corn, oats, rye, and others, are family friends, and by far the larger of what we know as grazing and forage crops belong to the grass family. Yet it is remarkable that few grasses have contributed to the realm of sentiment, and which plays such an important part in human happiness. That "all flesh is grass" is a trite metaphor,—but it has had little to do with human emotion aside from this comparison. It was used, in ages long since passed, as an emblem of submission, and to which the old English poet, Michael Drayton, refers in "The Barons' Wars":

> "About his temples grass they tie,
> Himself that so behaved,
> In some strong siege by the enemy
> A city that he'd saved."

This is explained by a reference in Herodotus as translated by Mrs. William Wirt, "amongst the ancient nations of the West, to show that they confessed themselves overcome, or that they surrendered at discretion, they gathered some grass and presented it to the conqueror. By this action they resigned all the claims to their country they possessed." The Rev'd Hilderic Friend, in his great work on "Flowers and Flower Lore," has gathered all the facts within his reach relating to the sentimental in the vegetable kingdom, but seems to have come across nothing in which grass played a part. All he found was the following, which relates only in the most distant way to grass:

> "A lesson in each flower,
> A story in each tree and bower,
> On every herb on which we tread
> Are written words, which, rightly read,
> Will lead us from earth's fragrant sod
> To hope, and holiness and God."

We can hardly conceive of sod aside from grass, so that thus remotely it may claim a place in Dr. Friend's regard.

But if not in general literature as a grass, *Amphicarpum Purshii* has a very interesting story to relate and lesson to impart to those who love knowledge for its own sake. The little bulb-like bodies among the roots, as seen in the picture, are exceptional among grasses. But they are really flowers, which become perfected without expansion, and mature the seed wholly in secret, as one might say. The production of such a class of flowers is now found

to be frequent, and is termed cleistogamy. The most succint explanation of this is given in the Century Dictionary, "Cleisto — or clistogamy. A peculiar dimorphism in the flowers of a plant, when, in addition to the fully developed condition of flowers, there are others in which development is arrested in the bud, but which are still fertile and produce an abundance of seed. These latter flowers are inconspicuous, without petals, nectaries, or fragrance, with small anthers containing few pollen-grains, and the pistil much reduced. They are necessarily self-fertilized, but are always fertile, while the more perfect flowers of the same plant are often nearly or quite sterile." The fact that some plants, especially the violet, produce these two forms of flowers, was known to some of our oldest English plant historians; but it is only within recent years that their significance has been perceived,—and it is mainly through the labors of Mr. Darwin, in relation to the cross-fertilization of flowers, that their nature has been closely studied and their importance in biology understood.

Our plant escaped the observation of the many earnest collectors of plants who became famous during the last century, and it was left to Frederick Pursh, in the early part of the present century, to come across it near Egg Harbor City, in New Jersey; and it was first described by him in his *Flora of North America*, published in 1814. He considered it, however, but a species of *Milium*, and he named it *Milium amphicarpon*, giving, at the same time, a very good picture of the plant. But Rafinesque, a little later, pointed out that there were good distinctions from *Milium*, and took Pursh's specific name as the designation of a new genus, *Amphicarpon*. Kunth, later, changed the orthography to *Amphicarpum*, and he is often referred to as the author of the genus,—a credit which properly belongs to Rafinesque, for all the Greek spelling of the Latin name.

The name is derived from the two forms of fruiting already referred to, though it has been doubted in some quarters whether the supposed perfect flowers, on the panicle proper, ever bear seeds, these being confined to the cleistogene flowers near the ground. The author's opportunities for examination have not been numerous, but he has never found a perfect seed in the parts above ground. The flowers, indeed, do not seem absolutely perfect. In our picture, the flowers are just expanding (Fig. 4, enlarged in Fig. 5). The two plumose pistils are not as long as the bracts. This shows weakness, as in most grasses they are exserted during some portions of their existence,—a fact which is relied on in arguments to show that grasses are arranged for cross-fertilization. The closed or fertile flowers push out in slender spikes near the ground (Fig. 6), and when considerably developed, as in Fig. 3, force their way into the sandy soil in which the plant loves to grow. Another species has been discovered south of Georgia, by Dr. M. A. Curtis, which he names *Amphicarpum Floridanum*, which has a much more diffuse habit, and cane-like character. Nuttall seems to have early discovered that this grass was no true *Milium*, for, though in his "Genera," published four years after Pursh published his "Flora," he still retains Pursh's name of *Milium amphicarpon*, there is a specimen of his in the Herbarium of the Academy of Natural Sciences of Philadelphia, collected by Read, on which he has written, for a proposed new name, *Gandina amphicarpa*.

As already noted, there has been much interest shown of late in plants which bear these cleistogamic flowers. It is not common in grasses, though Dr. Asa Gray notices it specially in the White Grass, *Leersia*. In relation to this, he says, "Flowers crowded on one-sided, panicled spikes or racemes, perfect; but those in the open panicles usually sterile by the abortion of the ovary; those inclosed in the sheaths of the leaves close-fertilized in the bud and prolific." In these fertile flowers, the stamens bear very little pollen, and this fact has been interpreted to mean that the plant economizes where there is a certainty of securing fertilization. But this explanation does not consider the immense waste of energy in producing so many sterile flowers. On this point, the further argument has been offered that the upper flowers, seemingly perfect, are so arranged as to secure an occasional cross. But if they rarely seed, the reason does not seem a substantial one.

EXPLANATION OF THE PLATE.—1. Plant from New Jersey. 2. Upper portion of panicle with barren flowers. 3. The subterranean fertile flowers. 4. Expanded barren flowers. 5. The same enlarged. 6. Fertile spike in the early stage.

WILD FLOWERS AND NATURE.

MEADOW FLOWERS.

And cups, the darlings of the eye
So deep in their vermilion dye.
Ah, me! what lovely tints are there,
Of olive—green, and scarlet bright:
In spikes and branches, and in stars,
Green, red, and pearly white.

—WORDSWORTH.

ROOT-STORING MICE.—I came across a feature in gardening, to-day, (March 11th,) that I have not seen noted. When uncovering some roses, I found several "caches" of fresh-looking bulbs of the English and Spanish Iris. There were from ten to a hundred bulbs in each deposit. The burrowed channels through the bed, and leading to the plantation of Iris, some ten feet away, indicated at once the presence of field mice—the short-tailed, mole-like nuisance, that in cold frames may be caught in the ordinary mouse trap, baited with cheese. Two empty nests, formed of leaves of grass, were found, but the deposits of bulbs were generally not near them. I could find no evidence of the bulbs proper being used for food, but am led to believe that it is only the young growing roots they desire. At the base of some bulbs, slight signs were noticeable, where the teeth, in endeavoring to get all there was of the roots, had scratched them. The bulbs were fresh and plump, and had started into growth an inch or more, but no signs of roots were visible, each bulb having been shorn of them. These Iris had been planted in groups of a dozen each, the groups being in a line, and about fifteen inches apart, so as to allow spreading annuals to be planted between to cover them when the leafage dies in mid-summer. The burrows led in a straight line from the rose bed to the Iris, crossing a line of hardy pinks, one of which they cut, because it was in their way. Then, straight down the line of Iris, completely encircling each group. On examining the ground where the Iris ought to have been, I found it full of fresh roots, showing not only that the bulbs had been there comparatively recently, but that they had been forcibly torn out from their places. I pulled up one bulb they had overlooked, and found that, while many rootlets broke off and remained in the soil, quite a number adhered. I also found some Iris bulbs in among a batch of *Lilium candidum*. While their burrows ran close to the lilies, I could find no evidence that they had injured them. I have had them injure *Anemone coronaria* and *Ranunculus*, in cold frames, but not bring the tubers to the surface. To dump about a peck of these bulbs on the soil pile at this season of the year, is not conducive to early or late piety.

Where I have been endeavoring to grow *Prunus triloba*, and numerous other things, even the Cut-leaved and Purple Beech in shrubby forms, the rabbits have cut back all they could reach, heavy irons enabling them to get up 3 feet. "It was ever thus since childhood's hour," etc. W. C. EGAN.

Highland Park, Illinois.

THE SWAMP CABBAGE AS A CUT FLOWER.—The Swamp Cabbage (*Symplocarpus fœtidus*) has generally been regarded as a sort of joke among spring flowers, although there are those who hail with pleasure the appearance of its purple streaked hoods in the bogs of late winter. The general public has been rather inclined to turn up its nose at the humble plant and its flowers. That it is by no means undeserving of a place, however, in the spring bouquet, was made manifest this season to the writer, who saw cut specimens of it set in vessels of water in at least two windows fronting on business thoroughfares in Philadelphia. The cuttings had been made at a point six or eight inches below the base of the spathe, and so as to include both flowering and leaf stalks. The effect was really striking and picturesque—the rich colors of the hood standing out boldly against the green background of the great opening leaves, in a way that must have arrested the attention of all that looked in the windows.

C. F. SAUNDERS.

LARGE HONEY LOCUST.—In reference to recent notes on the Honey Locust, Mrs. E. E. Orcutt, of San Diego, California, says: "It reminds me of a tall, slender tree covered with graceful foliage and many pendent racemes of fragrant white flowers. The tree grew with great rapidity, and it was said to bloom every month of the year in its native place. But it decayed as rapidly as it grew, and our Vermont sidewalk knew its fragrance and beauty no more, for its greatest admirers would not plant another, its life was so short. It must have been the *Robinia pseud-acacia* that I knew so well; but the Honey Locust recalled its beauty, and to read of a locust raised from seed in 1830 and still alive, is passing strange. The Honey Locust tree of America is a *Gleditschia;* the locust of West Indies is *Hymenæa Courbaril*, a gigantic tree, whose pods supply nutritious matter.

The name locust is also given to the Carob tree, a relative of *Acacia*, the unshelled pods of which it was supposed the Prodigal Son would have partaken in his self-exile from home and native land."

Just what was meant by the translation "locust" in the New Testament, has not yet been finally decided. Most commentators assume it to have reference to the pods of the Carob tree, and which is sold in our confectionaries as "St. John's Bread." The late Professor Riley, however, insisted that the text meant what it said. Veritable locusts, he believed, were eaten in these deserts. He averred, from his own culinary experiences, that fried locusts formed a dish fit for a king.

NAVEL ORANGES. — The so-called Navel Orange is a delight; it is also a curiosity. Its external aspect at once attracts attention, and is now familiar to everyone.

But it is the interior that especially excites wonder. We are frequently asked to explain its construction. We will venture to give our own idea of it, premising that this hypothesis may not be the correct one.

It need not excite our marvel that it is seedless. That condition is usually the result of long continued cultivation and selection. Many other fruits, as, for instance, the banana, show the same, or nearly similar, deprivation. In the banana, as generally seen, minute specks alone represent the seeds. Indeed, these in their perfect state are rarely seen except in some far-Eastern islands. The plant is propagated by off-shoots or cuttings.

It must be borne in mind, in this connection, that very many plants manifest two modes of reproduction; that by the seed, and that by some form of budding. Hence all the processes of layering, grafting, etc.

So much for the first point; the second is not so easy to demonstrate. It will be recalled that in the Navel Orange we have, as it were, one fruit within another, like a succession of telescopic pill-boxes. The inner, as well as the outer, may have a rind, but usually it does not. It varies much in size, and of course is, by situation, smaller. Again, the smaller it is, the better the regular fruit, for the interior berry is rarely as juicy and luscious as the outer.

We attribute the inner berry to supernumerary carpels. To explain, we will say that the generally-accepted theory of the formation of the pistil of a flower, is that it is composed of one or more metamorphosed leaves. If it is a simple pistil, there is but one such leaf or carpel; if compound, there are two or more carpels. According to the way in which these leaves or carpels fold and touch, there results a one, several, or many-celled ovary. The last is the condition in the orange as represented by its segments.

The cross-section of an ordinary Messina or Valentia orange shows these parts radiating like the spokes of a wheel from a common centre or axis. Now the whole flower, of which the pistil is the central part, is but a branch (a conception which we owe in part to the poet Goethe), and the carpels are peculiar leaves of that specialized branch. We take it that in the Navel Orange the branch or shoot continues to grow, producing another tier of carpels above or within the first set. The lower set is more vigorous, presses upon and crowds the inner, forming, at last, the characteristic dimple or navel which gives the fruit its name.

Such prolification of a flower-branch is seen any day in the two or more storied inflorescense of Chinese Primroses, or in the still more striking cases when a cherry, rose, or apple blossom continues a leafy shoot through its middle.

Could we but observe the flowers of the orange from bud development to fruit, it would

be possible to tell how nearly correct is this tentative explanation.

WILLIAM WHITMAN BAILEY.

Brown University.

Prof. Bailey's conception of the manner in which the Navel Orange is constructed by nature corresponds with that described in a paper published in the "Proceedings of the Academy of Natural Sciences" several years ago, and is undoubtedly correct.

QUERCUS MACROCARPA AND QUERCUS LYRATA.—I send you, to-day, five specimens of the Overcup Oak Acorns, *Quercus macrocarpa*. They are from two trees. Those marked No. 1 are from a tree growing near the Plattin Rock, on the river Plattin, this county. Those marked No. 2 are from a tree growing on the Swashin River, near the famous Shot-tower Rock, where in past times bird shot was made. The lead was melted on its summit and, in its melted state, was emptied on sieves of different degrees of fineness, to form the different grades of shot, from thence falling down over a hundred feet to a circular basin cut out of the rock. The basin, as it so happened, contained an everflowing spring of pure limestone water. The shot, dropping into this water, were afterwards gathered together and sold to the hunters in the surrounding country. I note what you say of the *Quercus lyrata*, in your MONTHLY, page 48. This oak—the Overcup Oak,—is very plentiful in this section of the country, and it varies very much according to its situation. It seems to thrive better, grow larger and with larger nuts and burs in the neighborhood of watercourses. On the hills, they are stunted and with small burs and nuts, and one seeing them would think they were another species of oak. But, whether the tree grows on the hills or on the bottoms, the leaves remain green until the frost kills them, and they remain on the trees all winter—or until the rising sap throws them off in the spring.

This oak generally makes a handsome tree. The lower limbs horizontal, the upper limbs upright and much forking, and they grow on the rich bottoms, to a goodly size, with straight trunks. Their nuts are mild, free from astringency and form the best of the most found in this section.

Hogs feed on them in preference to other acorns; and they are very fattening to horses. Cows also find them good food.

F. K. STEELE.

Festus, Mo.

TRILLIUM GRANDIFLORUM.—I enclose photo of a remarkable *Trillium* taken last spring, a *grandiflorum* freak, petals green, edged with white, three long-petioled leaves inserted about 1½ inches above the tuberous rootstalk. Britton & Brown say "A monstrous form, with two long-petioled leaves, was collected by Dr. Pitcher, in Michigan" but this specimen is one leaf better or worse. The stem was injured during transportation and was crudely propped in pot to be protographed. See the following illustration.

J. M. DICKSON.

Hamilton, Canada.

ABNORMAL TRILLIUM FLOWER.

GENERAL GARDENING.

A DEWY MORN.

All twinkling with the dew-drop sheen
The Brier rose fell in streamers green,
And creeping shrubs of a thousand dyes
Waved in the west-wind's summer sighs.

—THE LADY OF THE LAKE.

BEETLES ON ASTERS.—"What will prevent black beetles from destroying asters?" asks B. G Stillman, New York City. The Spanish Blister Beetles are probably intended. They could readily be destroyed by Paris Green, but this is not pleasant to use among flowers. On our grounds, we have a boy go over the plants, shake them to the ground, and crush underfoot.

SPRAYING MACHINES.— No garden is now complete without some kind of spraying machine among its tools and implements—with trouble from insects and fungi, the sprayers deal admirably. Some of them are small and adapted to house plants,—while on a larger scale the garden and orchard can be well served.

CRIMSON RAMBLER ROSE FOR CUTTING.— In choosing flowering plants for ground decoration, it is well to consider what may also be available for cut-flower purposes, for who does not enjoy the cutting and arrangement fresh from the garden, not to speak of the adornment to the house by vases filled and renewed at pleasure. A correspondent who is always on the lookout for plants suitable for this purpose, asks what climbing rose would be useful to her. Perhaps nothing better fills the want than the new Crimson Rambler. It furnishes a very long stem, and a large cluster of flowers of the most desirable shade of crimson. The numerous flower buds do not all open at once, and the branch should therefore be cut soon after enough are opened to give a proper effect.

The old Crimson Boursault is not to be despised, as it furnishes a good-sized flower and quite fragrant, in which the Rambler is lacking, but unfortunately the stems are not as long as is desired for cut-flower work.

HYMENOCALLIS LACERA AS AN AQUATIC.— Some years ago, a successful attempt was made in growing *Hymenocallis lacera* as an aquatic, and it was intended that other species, known usually as growing in dry soils, should be tried. Most plants will adapt themselves to unusual conditions, and the subject is worthy of further attention. It is hoped that the experiments made by Mr. Oberwetter (see page 44, Vol. 1,) may be extended.

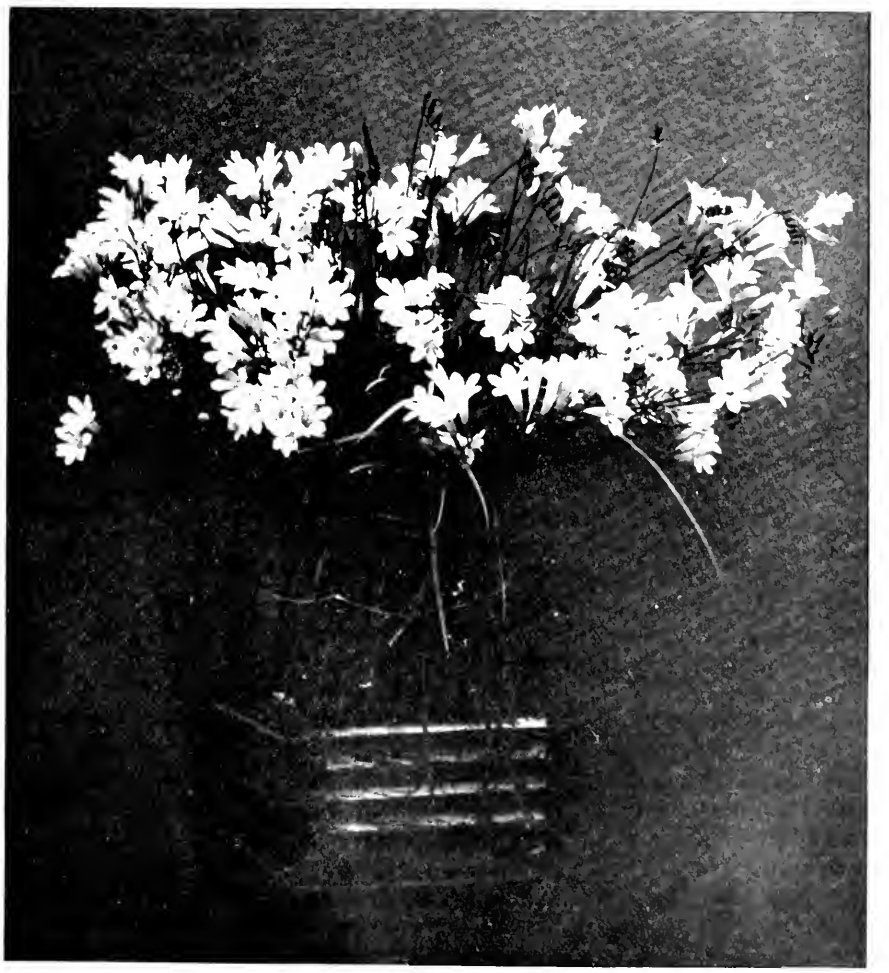
GRAFTING WAX.—The old style of having to warm grafting-wax when to be used was inconvenient. Some improvement was made when, once softened, it was put into alcohol, and introduced as liquid grafting-wax. This has never been entirely satisfactory. The Chemical Specialty Co., of Cleveland, Ohio, have introduced an article which can be kept ready for use at anytime, and which they contend, meets all requirements.

THINNING TREES. — The great beauty of many trees lies in the horizontal spread of their branches. In laying out ornamental tracts, trees have to be planted closer together, for immediate effect, than would be desirable at a later stage. They require thinning out after growing together for a number of years. But this is seldom thought of by the planter. When the necessity for thinning arrives, he cannot do it, as it sacrifices trees he has learned to love. Henceforward they have to go on struggling with each other as best they can. After the trees have journeyed well on toward maturity there is nothing gained by thinning. Trees advanced in years will never assume a pretty horizontal spread of branches. To cut away mature trees, does not benefit those left, but rather places them in an ugly light. It is better to leave them do the best they can together. One cause of the short lives of many trees is the struggle with each other for the scant supply of food. In this case, though thinning will do little good, a liberal surface dressing of manure will work wonders.

FREESIA REFRACTA ALBA.—When Linnæus founded a botanical system on the sexes of flowers, *Freesia*, with its three stamens, would have been in his class *Triandria*,—and its single pistil have gained for it a place in his order *Monogynia*. Modern botanists, in reducing plants to a system, take some one prominent genus as a type for others. The *Iris* has been taken for the order with which *Freesia* should be grouped, and hence it is said to be an Iridaceous plant At the present time, the *Freesia* is one of the most popular flowers for cultivation, by florists, for winter blooming.

It is said there are two species, and two or three varieties. They are natives of Cape of Good Hope. They are very beautiful winter blooming plants. The bulbs increase very rapidly, and should be well ripened off, before they are allowed to get dry. They grow well in baskets and should be given plenty of light and air. In the basket illustrated, which is nine inches square, forty-nine bulbs were put in it. Each bulb sends up one spike, which has between twenty-five and thirty flowers on it. If a truss is cut as soon as the first two flowers are open, the remaining buds will open, if kept in fresh water. Flowers: Calyx two-leaved, short. Perianth 2¼ inches long, white, with about six violet lines in the throat, yellowish at the base, and with a blotch of yellow on the lower segment of perianth. Some flowers are pure white, and all are delicately fragrant. The original form is purplish.

JOHN COULSON.



FREESIA REFRACTA ALBA.

AZALEA CALENDULACEA.—Among azaleas, *A. calendulacea* is without doubt the most brilliant in the color of its flowers. These are of a deep orange color,—or flame color, as it is usually described,—and quite large, though of less size than *A. mollis*. Even as a lone specimen, it demands admiration from everyone; massed, it is beyond description. It is one of those many plants that an enthusiast would speak of as being required to make any garden complete.

WATER LILIES IN TUBS, TANKS AND PONDS, — WHEN AND HOW TO PLANT THEM. — May is the ideal month in which to plant Water-lilies, though the season begins in March and continues into July, being regulated by the climate and the varieties one wishes to plant.

Aside from natural waters, there are three receptacles used for growing Water-lilies, namely: tubs, tanks and ponds.

Tubs are less used than tanks or ponds, coming in as an invaluable makeshift to those lacking better facilities. Ordinary half-barrel tubs are the most numerous, though tierces, vats, hogsheads, etc., are often sawn down and used. The tub is filled to within 8 or 12 inches of the top with soil, the lilies planted, the tub placed in full sunshine and kept full of water (should be wintered in the cellar.)

Tanks or cement basins, either under glass or in open air, are most satisfactory places to grow all kinds of water plants. The size and shape of the tank are matters to be adjusted by the owner and the purpose for which it is intended. Circles, ellipses, and parallelograms are mostly used. We prefer the latter; irregular and naturalistic character may be given in the planting; 6 by 12 feet or 12 by 20 feet and 2½ feet deep are convenient dimensions for small tanks; 20 by 50 feet and 3 feet deep in the middle is a good size for larger nymphæas. Victorias should have at least 700 square feet of water surface. The tank should be given a sunny location. In the absence of water-works, water to replenish with during the summer will have to be provided for from a spring, well, lead-trough from the roof of some building, or otherwise. Two barrels of water per week will supply a 12 by 20 tank during a scarce time.

The most economical tank is made by digging into the ground. Soil from the excavation may be thrown around the margins, sufficient to make a neat embankment if desired. Before the masonry is begun, a supply, an overflow and a drain pipe should be put in place, and, if the tank is to be artificially heated, connections for the flow and return pipes should be put through the walls in course of construction. The walls should be of brick or stone laid in cement and the soil well packed around the outsides. In cold climates, they should be 13 inches thick; in the latitude of southern Kentucky, 8 inches; further south, 4 inches thick will suffice. For the bottom, beat the soil down firm and cover to the depth of 4 inches with coarse gravel or broken brick or stone. On this, pour thin mortar made of one part sand and two parts cement, seeing that the gravel are coarse enough and the mortar thin enough to run freely to the bottom everywhere. Then finish both bottom and sides with a good coat of Portland cement. In latitudes where there is no danger of hard freezing, or in greenhouses, a good coat of cement plastered to the soil, without a wall, will be sufficient. Care should be taken, in this case, to pack the soil solidly together as there is danger of the plaster bursting from the heavy pressure of the water. Lilies should not be planted in a tank for a few days after completion while the water is strong of cement.

The construction of ponds is less intricate. If the water is to be had from surrounding hillsides, from springs or streams generally, the lowest part of the ground is the most suitable place. If the pond is to be made by building a dam across a stream, due preparation should be taken against freshets by throwing the basin to one side in order that the current may not rush pell-mell through the lily plantation. The water line or edge of the pond should be determined by a spirit-level or otherwise, and the soil removed to the depth required, either by an ordinary pond-scraper or with pick, shovel and cart. If desired for water plants wholly, three and one-half feet is deep enough; but for large ponds, it is recommended that considerable depth be attained and only the shallower places be used for lilies. Where the soil is porous or gravelly and the water supply scant, the whole basin should be plastered with a three or four inch coat of stiff clay

mud; but where the soil is naturally of a clayey texture, a good pounding with mauls or allowing stock to tramp the place for a season will make the bottom almost as retentive as if cemented.

Doubtless there are a greater number of failures in Water-lily culture arising from an undue knowledge in *the selection of varieties* than from any other source. If tubs are to be planted, select stock adapted to tub culture—the same with tanks and ponds—and do not expect plants from Sweden to flourish alongside of those from Brazil.

In tubs of the hardy Water-lilies, any of the *Nymphæa pygmæa*, *N. Laydekeri*, or *N. odorata* families may be grown well. The *Marliacea* varieties are rather large. *Nelumbium*, or lotus, make fine tub plants—especially *N. speciosum* and *N. album grandiflorum*, because they have been under rigid cultivation in the Orient for centuries. Of the tender varieties, *N. Mexicana*, *N. flava* and *N. gracilis* are the best. The Zanzibar lilies, *N. dentata*, *N. scutifolia* and *N. Devoniensis* may be "dwarfed" in tubs, where they do splendidly, but cannot be brought to themselves in water of less than 10 feet in diameter. The other tropical lilies submit with reluctance to limited quarters and should be given plenty of room.

In a Water-lily tank, without artificial heat in open air in this latitude, all the tropical Water-lilies, including the Victorias, may be planted out after June 1st and be flowered with success; strong, healthy plants and plenty of food being the chief requisites. All kinds of hardy lilies may be grown in tanks.

In natural ponds of proper depth and mud bottoms, that are not supplied by cold springs and that are not too much shaded, all the hardy Water-lilies will thrive and live over winter without protection anywhere in the United States or Southern Canada. All the tropical Water-lilies may be grown successfully in open ponds, but require the protection of a greenhouse or warm cellar over winter.

No Water-lilies do well in swift streams; but slow streams and coves may be utilized with perfect satisfaction. In swamps or sloughs where the soil is barely covered with water, the lotuses may be grown with good effect.

The soil for growing aquatics is of the simplest kind. They are strong but not choice feeders. Heavy loam from the garden, made rich by well-decayed, manure is an ideal artificial soil. If commercial fertilizers or fresh manure are used, in decomposing they give a stench to the water and cause it to stagnate.

For planting, the soil may be placed either in boxes or spread entirely over the bottom of the tank or pond to the depth of 10 inches. Planting in boxes is preferred in ponds where the water is liable to rise and fall during the summer, in order that the young plants may be kept at congenial depths until established, discretion should be used in planting the small varieties in shallow water and the stronger sorts in deep places; care should be taken never to bruise a Water lily root, especially a lotus, as it often proves fatal. In planting, dig out a trench in the mud with the hands and lay the root in horizontally—not set up endwise—and cover to a depth twice the thickness of the root. If there are fish in the water, poultry netting, slab stones or something more available should be placed around the roots for protection.

Being judiciously selected and planted in favorable quarters, Water-lilies need practically no further cultivation and are sure to succeed with anyone.

GEORGE B. MOULDER.

Smith's Grove, Ky.

RAFFIA FOR BUDDING, GRAFTING AND TYING.—On every private place of any pretension as to size, there is more or less grafting and budding to be done. Various materials are in use for tying in the grafts or buds, but none are the equal of Raffia. It is broad, soft and pliable, and does not bind the bark as readily as others. Bass bark was once the popular material for these purposes, but it was less convenient, requiring wetting at the time of using. Raffia is procured in long plaits, the strands of which are cut up into desired lengths. It is the product of the leaves of a palm, *Raphia pedunculata*, which grows only in Madagascar. The quality is chiefly shown in its color, which should be of a brownish white. As a pound is considered sufficient to tie about two thousand buds or grafts, that amount would last a long time, if kept dry, on a private place. It may also be used for general tying around the greenhouses, among tender plants, because of its breadth in comparison with string.

PROPAGATING CYCLAMEN. — This plant, though belonging to the primrose family, has large fleshy seeds, produced in seed-vessels which, before maturing, project above the foliage; but later the peduncles twist themselves into a close spiral, bringing the ripening seed-vessels close to the soil, and no doubt in its natural habitat, into the soft soil or humus commonly found in shady places, when the seeds germinate. Let us take a hint from this, and prepare our pans or boxes by making the soil firm, then sowing the seed, and covering with sifted leaf-mould mixed with a small quantity of fresh loam. When the little corms have reached the size of Sweet-Pea seed, they should be carefully pricked out into boxes, avoiding thereby breaking or injuring the roots; water copiously, and shade for a day or two. On no account permit the soil ever to get dry. Keep the plants growing freely in intermediate-house, and when they have developed five or six leaves, they may be potted into small 60's. The final shift into 48's should be made as soon as the roots reach the sides of the pot. The soil used for this shift should consist of leaf-mould one-half, and well-decayed cowdung; fresh loam, and a little sharp sand, forming the remaining half. June to August is the best time to sow seed of the cyclamen.—*London Gardeners Chronicle.*

SEAWEED AS A FERTILIZER.—Though the use of seaweed as a fertilizer is quite common in Great Britain, its value as such is little known in this country. Its chief element is water, and on this account, it is said, it is particularly beneficial to succulent crops, as potatoes, asparagus, etc. Potash and salt are other prominent constituents; but it is practically destitute of minerals, rendering its period of value brief. It is necessary that it should be used as soon as possible after being collected, and may be either spread on the surface or worked into the soil. To get the full value of the fertilizing elements, however, it should not be exposed on the surface. The seaweed most commonly seen on the New Jersey coast, *Fucus vesiculosus*,—the one with curious little inflated bladders between the tissues of the leaves,—is said to be one of the most valuable. It should be effective on soils naturally dry, by reason of the hygrometrical properties of the salt, adding moisture to the ground.

NEW OR RARE PLANTS.

A JAPANESE BLOOD-LEAVED MAPLE HEDGE. —Considering the many wonderfully beautiful effects to be had from the arrangements of plants unknown to the general public, it is puzzling that some of our more wealthy citizens of leisure do not interest themselves more in beautifying the surroundings of their large and expensive residences. The resources are unlimited. Take the subject of this paragraph, for instance. A hedge of this lovely Japanese Maple would surpass any effect ever attempted in landscape arrangement, and so simple, too. It would cost no more than a good-sized bed of rhododendrons and be exactly eight times as effective, for the charm of such a bed ceases with the fading of the flowers.

During the last week in April, the writer drew inspiration for this commendation from a view of about a dozen nursery rows of these maples, the leaves just expanded, each extending a distance of one hundred yards. Their beauty was unsurpassed! Can the readers of MEEHANS' MONTHLY who have seen single specimens imagine such a mass of coloring? Oh! for a Horticultural Worth to start some fashions worthy of the material.

FLOWERS OF THE HARDY ORANGE.—Quite a feature of the shrubbery beds near Horticultural Hall, Fairmount Park, Philadelphia, consisted of some blooming plants of the Hardy Orange, *Citrus trifoliata*. The plants have been kept back by pruning, making bushy specimens, which bloom profusely. The flowers are similar to those of ordinary oranges, but not nearly so fragrant. Considering the heavy "cock-spur" spines, the small oranges and the flowers, this makes quite an interesting plant. It is barely evergreen in the vicinity of Philadelphia.

TUFTED PANSIES.—The pansy is a species of violet,—*Viola tricolor*. Some thirty years ago, the Dicksons, nurserymen of Edinburg, Scotland, crossed a wild violet of Scotland, *Viola amœna*, with the garden pansy, and the result was a beautiful hybrid. Other species of wild violet were subsequently tried, until the distinct race, known as tufted pansies, was produced.

BEGONIA ERECTA CRISTATA.—Under the name of *Begonia erecta cristata*, appears the annexed illustration in the catalogue of Georges Bruant, of Poitiers, France. The crested arrangement of the stamens in this variety brings in a wholly new feature in this interesting class of window flowers. *Begonia erecta*, of which this is a variation, is a Brazilian species.

MORNING GLORIES.—The old-fashion *Convolvulus*, which we all know as the Morning Glory, constitutes one of the fancy flowers of Japan. The florists make every effort to get new strains of varieties in the form of growth as well as colors. Any florist, who can originate a new spot, stripe, or wrinkle on a blossom, is in a fair way for an Asiatic fortune.

A NEW FORSYTHIA.—The Forsythia, or Golden Bell, seems liable to many variations. The three already in gardens from China, *viridissima*, *suspensa*, and *Fortunii*, are all forms of one thing. Another form, quite as distinct as the others, is said to have been discovered in Albania.

A YELLOW-BERRIED HOLLY.—Rumors of a discovery of a yellow-berried holly are afloat. While it is doubtful that such a color would be prettier than our charming red one, it is to be hoped that something may develop from this find, for the sake of variety.

VIOLET, MRS. J. J. ASTOR.—This new violet is described as of a lovely shade of rosy-heliotrope, the fine flowers are rather darker than Mme. Millet, and the growth more vigorous. It is also a surprisingly free bloomer, early, and very sweet-scented. A long stem is now considered essential to constitute a first-class violet.

BEGONIA ERECTA CRISTATA.

THE HARDY FLOWER GARDEN.

HEALTHY ROSES.—Mr. McPike, of Alton, Illinois, says that the plague of fungi and insects on roses is not a serious one. He uses kerosene emulsions. He adds "I can spray all my rose bushes in an hour or two, and one spraying is generally sufficient."

DO PÆONIES MIX?—Some years ago, roots of pink and white pæonies were planted but a few feet apart. "They will mix," said a friend, later. But I regarded this as a whim, based on the fact that seeds are frequently crossed. Yet now the pæony, which was at first pure white, is more or less tinged with pink. Is its proximity to the colored variety responsible for this? and if so, why?

BESSIE L. PUTNAM.

The idea suggested is that the pollen of one kind, absorbed by another kind, has influenced the latter to become changed, just as a hybrid plant would do when raised from seed. Though this is a popular impression, no proof has ever been given of the correctness of this notion. On the contrary, such direct experiments that have been made to test its correctness, have produced negative results. The ability of plants to sport is so great that there is no need for calling in what appear to be physiological impossibilities to account for them.

CANTERBURY BELLS.—In the case of the Bellflower, popular endorsement is given to the botanical name, *Campanula*, which has the same signification. All of the several hundreds of species are Bellflowers by common consent. Many have special associations. There are the Blue-Bells-of-Scotland; and the Canterbury Bells, of which a specimen from *Gardening Illustrated* is represented on page 93. As simply the

Canterbury Bell, *Campanula Medium*, a native of the South of Europe, has long been known and appreciated in gardens. Of late years, the florist's hand has been at work, and given us many forms, curiously different from the original species. The one illustrated is a specimen of this handiwork. Instead of the ordinary blue flower, with a green calyx, the corolla is white, and the calyx has been transformed into a sort of white lace collar placed around the neck of the flower. In many other ways, the Canterbury Bell has been made to vary with great interest to the cultivator.

Unfortunately, this species is but a biennial, though hardy. There are some species of *Platycodon*—most frequently known as *Campanula*—that are equally interesting in their way, viz : *P. grandiflorum*, *P.* var. *album* and *P.* var. *Mariesii*. They are valuable features in a hardy border.

PHLOX VARIETIES.—The Royal Horticultural Society distributes plants to its Fellows, with the idea of disseminating new or little used kinds. Of 449 plants offered, 237 are varieties of the well-known garden phlox. What a task for the amateur gardener ! Twenty-five would give an ample assortment. Who can name that number of distinct and meritorious varieties ? *Phlox decussata* or *paniculata*, which are very much hybridized, are referred to.

FRUITS AND VEGETABLES.

CURRANT CULTURE.—One of our gardeners brings unusually fine currants to our market, while the currants of others have but few berries to a bunch because, as they say, the Currant Worms eat up and skeletonize the leaves of their bushes, notwithstanding their being dusted with Paris Green and other poisons. I asked this gardener how he managed to keep the caterpillars off of his currant bushes ? He said: "When the leaves of the currant have attained about the size of a silver dollar, the fly lays its eggs on the underside of the leaves. The eggs hatch out and the little worms puncture the leaves with numerous holes the size of a pin head. I watch for the punctures in the leaves and on the first discovery of them I walk along the rows of my currant bushes and with my fingers and thumb crush the little worms under every punctured leaf. They are all there in a nest, as it were. It takes but a short time to destroy all the little worms in that way, and I thus keep my bushes free from the nuisance and get perfect fruit from them. In watching for the punctured leaves and killing the young worms, a stitch in time does not only save nine, but it saves the whole garment.

Dayton, Ohio. HORTICOLE.

LATE VEGETABLE SEED-SOWING.—There is much to be done in June in the way of sowing vegetable seeds in many temperate localities. Such as beans, corn, cucumbers, okra, salsify, melons, squash, pumpkins, and canteloupes are best deferred until the soil is thoroughly warmed.

Many of the earlier sowings should be repeated to furnish crops in succession. Most all gardeners keep this in mind respecting peas and overlook others equally desirable. Cucumbers for pickling may be brought in as a late crop.

It may seem a consideration of little moment to those who have but small gardens, but to keep the soil up to the highest condition pay attention to the location of certain things. Put deep-rooted plants where shallow-rooted ones have been previously.

PROPAGATING STRAWBERRIES.—If one has a variety of strawberry desirable for propagation, it is a good practice to peg down the earliest runners close to the ground. If small stones are at hand, one placed at the end of the runner will do as well. Pegs are easily made, cutting twigs into lengths of eight or ten inches, and splitting them. They will then bend like hair-pins; or tooth-picks may be utilized. If small pots of rich earth be placed under the runner's bud, so much the better for an early and strong plant.

CABBAGE WORMS.—"An amateur lady-gardener" says the *Florida Farmer* "dusted her worm-infested cabbage patch with buckwheat flour and reported satisfactory results. Another gardener being troubled in a like manner, and hearing of said remedy, but having no buckwheat flour, used the so-called middlings, with killing effect. The best time to apply the flour is when the cabbage is covered with moisture, either after dew fall or rain."

STRAWBERRIES AND WATER.—Experiment in a small way is the only way to learn. Now there is much talk of irrigating strawberry plants whilst they are fruiting. I am not claiming that irrigation is new, by any means, nor that irrigation of this crop is new; but I do claim that there are very few men who irrigate their strawberry patches for the purpose of producing more fruit, larger fruit, extending the season and making the last berries as large and as fine as the first berries. All of this can be done with water, therefore water must be held in a plentiful supply and in a cheap way. Nearly every farm in hilly sections can have receptacles for holding a large supply of water. If a person has but one hillslope, it would cost but little to make a spring in the upper portion of it. Then, planting the strawberry plant midway of the slope or at its lower end, there would be a head of water powerful enough to be used through the hose. In building this spring, the earth can be cheaply moved by a plow and scoop. The spring should be dug horizontally with the hill and about 40 feet from its top and a space scooped out 80 or 100 feet long, 8 or 10 feet wide, 3 or 4 feet deep; but these conditions must vary according to the width of the hill and circumstances surrounding. Rock ought to be plentiful, for this has much to do with its cheapness and its perfect work. After the hole is excavated, the pipes for the outlet should be placed in position. For a small spring, one line of pipes, buried beneath the soil out of the way of the plow and frosts, with small hydrants at frequent intervals will answer; for larger springs, from two to several lines of pipes, and many hydrants, will do the business. If the excavation is made through clay, several barrels of cement should be used, mixed with sand, to make the bottom and sides impervious to water. One coat will be enough. Then rock, carefully laid on the bottom, (the larger the chunks of rock for the bottom, of course the better) with wide spaces between, then thin flakes laid on thin tops [?], on the top of these other rocks, and so on, always observing to leave as large spaces around the rocks as possible. When there is about six or eight feet of rocks in height, then the small interstices should be filled in with smaller rocks, and then a foot or more of earth laid on, except near the edge of the hill on its upper side,—here then should be stone, broken fine, or coarse gravel a foot or more deep, for it is here that the water comes in from above, and the small stone or gravel is to keep the sediment from entering the many caverns beneath. The outlet pipes should be turned up inside the excavation with sewer pipes screwed on their ends, although hardly necessary if there is plenty of fine stone or gravel for filtering the water before its ingress into the rocky caverns beneath. These springs will furnish cold water all the year round, and enough for

CANTERBURY BELLS.—SEE PAGE 91.

all irrigating purposes. They catch the surface water from every rain, hold it and it is purified, fit for man to drink, free from insects, never liable to get out of order, no pumping nor heavy work, only to screw on a hose-coupling, turn the stopcock, and the water is rushing; and when one of these springs is well made, it will last forever. Let us all experiment a little this year.

F. K. STEELE.

Festus, Jefferson Co., Missouri.

GOOSEBERRY CULTURE.—It is well-known that, in the dry, warm climate of America the gooseberry is not a success. At least, this is true as regards the foreign variety of gooseberry. They are attacked by a species of mildew which not only interferes with the ripening of the fruit, but also weakens the vital powers of the plant. A bush which has suffered from mildew is more likely to be injured by frost than one which is free from the attention of this little parasite. In a recent walk through the garden of Mrs. Betton, in Germantown, near Philadelphia, (which by-the-way, is one of the most beautiful of all the existing old-fashion gardens around Philadelphia,) it was surprising to notice the absolute health and vigor of large numbers of English gooseberry plants. They were perfectly healthy and bearing as large and fine fruit as could be seen anywhere. The gardener informed the representative of our magazine that his practice was to reduce dry lime to absolute powder, and then sift it over the plants early in the season. This he regarded as a perfect preventative to the mildew. As this is done every year, with good results always following, it does seem certain that this dry powdered lime is really effective.

BURDOCK AS A VEGETABLE.—What is even regarded as a vile weed can, with a little stretch of imagination, be turned into an ornamental plant or delicious vegetable. This is especially the case with the common Burdock, *Lappa major*. Schoolboys all know it from gathering the burs and compressing them into a ball, they being held together by the curved points of the floral involucre. This is all they know about it. It is difficult to see anything more to be despised in the Burdock leaf than in the leaf of the Rhubarb. It appears that it is largely used in China for food. But it is stated that, if the stalks be cut down before the flowers expand and then be boiled, the taste is relished equally with asparagus. The leaves, when young, are boiled and eaten as we eat spinach. In Japan, it is in universal use. Thousands of acres are devoted to its culture. But in this case, the root is the object. It requires deep soil to get the roots to the best advantage. The common name, in China, is Gobbo—a name, however, which need not replace our common one of Burdock.

DEWBERRIES.—Several attempts have been made by selection to improve the dewberry so as to make it a valuable garden fruit; but with a single exception of one variety, namely, Lucretia, none have become popular,—and even this variety seems to be confined to the gardens of amateurs. As it is naturally a trailer, it has to be tied to a stake. As they ripen two or three weeks earlier than the varieties of the common garden species, they are appreciated by those who grow fruits for their own use. The general public, however, would give no more, probably, for the early blackberry than for the later ones, and as they are not so productive, they cannot be raised at this rate to a profit. This is probably the reason why they do not appear in the list of market-grown fruits.

PRESERVATION OF FRUITS.—It is not generally known, that a strong element in the successful preservation of fruits, is healthfulness in the tree that bore them. An apple, pear or grape that can be kept for three months after gathering from trees in a perfect state of health, will show evidence of decay in much less time than if taken from trees in a less vital condition. Some fruits will of course naturally keep longer than others. There are autumn pears and apples and winter pears and apples. This condition is a result of a constitutional difference; but aside from this constitutional difference, vigorous life-power has much to do.

CELERY.—In serving up celery, modern caterers cut off the root. To many, this is the choicest portion of the whole. One variety is grown for the sake of its roots alone. It is known as Celeriac. Both root and leaf-stalks are regarded as a choice edible. It is seldom seen in our markets or grown in our gardens.

BIOGRAPHY AND LITERATURE.

BY THE WATERFALL.

The merchant, deaf with the city's roar,
And weary of counting his dollars and worn,
The student, wont o'er his books to pore
And the wounded in spirit that silent mourn,
May fill at fountains of freshness here,
A cup with a draught that never palls,
And the soul with beauty, for far and near,
The woods resound with the waterfalls.

—HOWARD WORCESTER GILBERT.

THOMAS CARTLEDGE. — It is only within recent years that the trade in cut-flowers has risen to such prominence as to be a business of national importance, and capable of sustaining a number of able trade papers. One of the leading pioneers in this laudable enterprize was the well-known firm of Pennock Brothers, of Philadelphia, in which Thomas Cartledge bore the leading part. His death on the 17th of May, in his 63d year has been announced. His broad intelligence and lovable character as a man, gave an additional charm to his superior business capacity.

THE AUTHOR OF PRIMULA VERIS.—Attention is called to an error in crediting the poem, *Primula veris*, in the May issue. Lenau was the author, and Henry D. Wireman the translator. The correspondent has words of praise for similar translations by Mr. Wireman, some of which will furnish treats for readers of future issues.

THE WITCH HAZEL. — "Can anyone tell why it was once supposed by some that a branch of this shrub would involuntarily turn in the hands, of the right person, and indicate the presence of water in the earth?" E. E. O.

Correspondents of MEEHANS' MONTHLY are permitted to use Witch Hazel instead of Wych Hazel because modern dictionaries seem to authorize either. It is unfortunate as it tends to confound distinct matters. Our plant has no connection with the magic of the water hunter. The Black Thorn of England, *Prunus spinosa*, was the wood used in these divinations or whatever these superstitious practices may be termed. Hazel had a very wide meaning in the olden times, and the elm, as well as the nut now known as such, was Hazel. One of these elms, now known as *Ulmus montana*, was the favorite wood for making wyches or provision chests, and was therefore known as the Wych Hazel. In the present day it is the Wych Elm. Our *Hamamelis* received from the early settlers the name of Wych Hazel from the resemblance of the leaves to those of the Wych Hazel or Elm of the Old World. Language reformers imagining that wych should be spelled witch are responsible for the confusion. Wych Hazel is the correct term for our plant.

GREENHOUSE MANAGEMENT,—FRUITS AND FLOWERS UNDER GLASS.—By L. R. Taft. Published in New York, by Orange Judd Company. It is nothing against this book that its author is Professor of Horticulture in Michigan Agricultural College, general as the impression prevails that one who may be a success in college teaching is found wanting in the balance of practical work. To our mind it is one of the most useful guides, in the field it occupies, that has yet appeared. The florist or fruit grower, who has to look to profit for his returns, as well as the amateur flower or fruit grower, whose returns are to be weighed in the scale of pleasure, will alike find the book eminently useful.

THE CRIMSON RAMBLER ROSE.—A correspondent of the *London Journal of Horticulture* says: "The Crimson Rambler Rose was purchased for Mr. Jenner, by commission in Japan, in the year 1878, through Professor B. Smith, residing in Tokio at that time, but who was presently, if not still, at Mason College, Birmingham. Mr. Jenner was particularly pleased with its free-flowering and very striking effect, and it was grown for about a dozen years in a private garden. Then Mr. Jenner presented the entire stock to Mr. Gilbert of the

Bulb Nurseries, Bourne, Lincolnshire, and he, with his consent, sold it to Mr. Turner of Slough. It was originally called The Engineer, I believe, because an engineer first brought it to Mr. Jenner's or Professor Smith's knowledge; indeed, it was actually shown as such at the Royal Horticultural Society, and received an award of merit on July 8, 1890. Mr. Jenner consented to the name being changed to Crimson Rambler, which is most appropriate. . . The gold medal of the N. R. S. was unanimously awarded it at the C. P. exhibition of 1893, when it was described as a climbing Polyantha Rose."

GENERAL NOTES.

CITY FORESTERS.—The April issue of the *Forester* has an able article on forestry in its relation to arboriculture, and has a judicious thrust at the modern affectation, by city gardeners, of the cognomen of "City Foresters."

FORESTRY IN MINNESOTA.—The Chief Firewarden of Minnesota reports that there are, in seventy-five townships alone, 600,000 acres of land that could be more profitably used in the culture of White Pine timber than in any other way.

PUBLIC PARKS.—The need of public parks, open spaces, and play-grounds for children in all our large towns and cities is appreciated in these times as never before. The Park and Outdoor Art Association, founded last year, is doing yeoman service in these lines, and deserves hearty support. It meets this year in Minneapolis on the 22nd, 23rd and 24th of June. Among the eminent landscape gardeners who will address the meeting may be noted W. W. Folwell, J. H. Patterson, Fred. Kanot, B. E. Fernow, Chas. M. Loring, O. C. Simonds, O. B. Douglas, Chas. N. Lowrie, J. A. Pettigrew, A. C. Clas, and C. H. Wahl. Warren H. Manning, Boston, Mass., is Secretary and Treasurer. It is believed special railroad rates will be secured.

QUARANTINING PLANTS. — The Canadian Government has prohibited absolutely the introduction of certain nursery stock from the United States to the Dominion, for fear of introducing the San José Scale. Americans can not much complain, as most of the States have been quarantining each other; and Germany, alarmed by our own excitement, has prohibited American fruits. To show how silly this is, it is only necessary to say, that the insect already exists in most of these places, and if not can easily get there, in a multitude of ways aside from traveling by nursery stock. The Colorado potato beetle simply took a ride on a railroad train for the East; and the Scale can get across the line on a bird's foot or feather, just as well as on a tree, and no doubt can breed just as well on a native forest tree, as on any tree from a nursery. Puck says,—"What fools these mortals be."

NATURE STUDIES IN THE PUBLIC SCHOOLS. —For years, there have been efforts to have science taught in the public schools. It seemed to require special teachers for special subjects,—a method too expensive for the public school system. Some science is, however, a very simple thing. To teach the young to see, to compare, and to judge is the best foundation for a truly scientific character,—and this habit any teacher of good judgment is able to form in the average child. This course of teaching, under the name of nature study, is now prevalent in advanced public schools. Hartford, Connecticut, always in advance in educational matters, has gone further than some others, and has started the formation of Public School Herbariums. Premiums of $5.00 for a collection of not less than 100 native flowers, down to $3.00 and $2.00 for 50, are offered the children. Dr. G. Pierrepont Davis seems to have been the originator of the movement,—and Mrs. Wilhelmine Seliger, and Superintendents of Keney Park and the general City Parks, Messrs. Parker and Wirth, all of Hartford, his worthy co-adjutors. The park superintendents offer to name the plants for the children in difficult determinations. The appointments of city gardeners, city foresters, or whatever else they may be termed, were, primarily, with the view of giving information to citizens,—though in many cases this has degenerated to little more than planting Holland bulbs in public plots. To be useful in public school education, as the worthy people named purpose to be, is a new departure well worth the attention of other cities besides Hartford.

TEUCRIUM CANADENSE.

AMERICAN GERMANDER.

NATURAL ORDER, LABIATÆ.

TEUCRIUM CANADENSE, Linnæus.—Soft-pubescent to canescent-tomentose, one to three feet high; leaves oblong-ovate to oblong-lanceolate, sharply serrate, short petioled; spike at length six to twelve inches long; flowers short pedicelled; corolla purple rose or sometimes cream color, half-inch long; calyx canescent, sometimes distinctly short-pubescent; the three upper lobes very obtuse. Gray's *Synoptical Flora of North America*. See also, Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States* and Wood's *Class-Book of Botany*.)

Modern botany occupies a wide field. It is something more than a classification of plants. The student justly feels that he has gained much when he is able to find the name of a plant, from a written description,—and still more when he is able to place the plant easily in its proper position in the system of nature. But he soon finds that with this he has simply learned the alphabet of botany. In like manner, the simple lover of wild flowers, who has been termed a botanist in embryo, is soon dissatisfied with the mere admiration of the colors or forms of flowers, and yearns to know what place the flower has in human history. In the present instance, having worked out from the description that the plant is the *Teucrium Canadense*, and that it is commonly known as the American Germander, the origin and application of the names will be topics of interest. And there are few more profitable studies than that of the history of plant names; for, in the pursuit of the study, we may learn more of a plant's broad botanical relations than in any other way. Here we may first ask what is Germander,—and then why American Germander? Taking up philology, we note that there is no root in any ancient language, living or dead, from which the word Germander could have been derived. Hence it must be a term of comparatively modern origin. It is a French corruption, still more corrupted by the English, of *Chamædrys*—a word made up of two Greek words, *drys*, an oak, and *Chamai*, on the ground. As we pursue our studies further, we find, that in ancient times the forms of leaves were taken as one of the leading characters in classification,—and thus plants growing low on the ground, and with leaves of the form of the English Oak, would be drawn together into a genus of dwarf, oak like leaved plants, or *Chamædrys*. One of the species of *Teucrium* of the Old World had such leaves, and hence it was classed with the genus *Chamædrys*. The original is now believed to be *Teucrium Chamædrys*,—though the one which the ancients had in view was probably *Teucrium Scordium* or its near relative *Teucrium Scorodonia*, and with which our American Germander is closely allied. Even so recently as the earlier part of the last century, we find the celebrated Tournefort writing of our plant as "*Chamædrys Canadensis, urticæfolio subtus incano*,"—that is to say, the Canadian Chamædrys with nettle-like leaves, hoary beneath. As early as 1636, however, we find Gerard, protesting against this promiscuous union. He remarks "The old writers have set downe no certain kindes of Germander,—yet we have thought it good, and not without cause, to treat of more sorts than have been observed by all, dividing those under the title of *Teucrium* from *Chamædrys*, although they are both of one kinde, but yet differing very notably." This division left the beautiful blue speedwell of English hedgerows, *Veronica Chamædrys*, to represent the old families. This is the Germander referred to by Ebenezer Elliott as "eyebright."

"Blue eyebright! loveliest flower of all that grow
In flower-loved England! flower whose hedge-side gaze
Is like an infant's, what heart does not know
Thee, clustere'd smiler of the bank, where plays
The sunbeam on the emerald snake and strays
The dazzling rill, companion of the road."

The ancient inhabitants of Troy were known to their enemies as the Teucrei, which is said to have been derived from one Teucer, who is believed to have founded that city, and whose daughter married Dardanus, the first Trojan king. It is said that Teucer first employed the plant medicinally, and that it is on this account that the plant was called *Teucrium*.

In what way he used it, is not clear. The European Scordium is said to have an odor of garlic,—and, referring to our plant, Rafinesque sums its whole medical history in a single paragraph: "'*Teucrium* of Linnæus' —The Germander—a prolific genus, but few American. *T. Chamæpitys* grows in Virginia, according to Schoeff. All more or less aromatic, bitter, stimulant tonic, pellant, menagogue, useful in agues, chlorosis, gout, rheumatism, hematuria, etc. *T. Canadensis* has a sub-alliaceous smell." Gerard says, the name *Scordium* was given to that species "from the smell of garlicke." One of the European allies of our species is said to have undoubted medical properties, having cured Charles V, King of France, of the gout. But as it is stated that the King had to persevere with his Germander tea for sixty days before the gout would leave him, it is probably regarded as too slow a remedy for the moderns, as it seems to have no reputation in medicine at this time.

The earlier botanists and collectors of our country considered there were two species under what we regard as *Teucrium Canadense*. The other they named *Teucrium Virginicum*. Linnæus regarded them as distinct, as did botanists generally until the incoming of the present century. Our acute botanist, Nuttall, regarded the two as distinct. It is very difficult to decide from the descriptions of botanists as to whether the two forms should be regarded as one species or not. If they be, the descriptions should be revised.

Beck, in 1823, seems among the earlier of our botanists to suggest that they were identical; but as he describes both as having "leaves ovate and serrate," it may be well doubted whether he was familiar with many forms. It is more than likely that the early botanists were right, and that the division into *Teucrium Canadense*, and *Teucrium Virginicum*, should still prevail,—but it would be difficult to decide which form should bear the descriptive name. When a large number of specimens by different collectors from many parts of the country are examined, it will be seen that one form is always densely and sharply serrate, while the leaves of the other form are always widely crenately-serrate. There may be variations in the length or width of the leaves,—the hairiness or hoariness of the foliage,—the length of the spike or the character of the bracts; but the special character of the serratures never seem to change. But which is which? Before the author is a specimen labeled by Nuttall as *T. Virginicum*, from "Salt marshes near the sea in Long Island Sound," the leaves of which are about two inches long and but half an inch wide, much reticulated beneath, and finely and sharply serrate. The narrow-leaved Texan forms are all finely serrate. A remarkably vigorous two-feet specimen by Buckley, from Austin, with leaves three inches long, but only ¾ inch wide, is also very finely serrate. Pitcher has one from Arkansas, three inches long and but a half-inch wide, also finely serrate. Oblong-ovate leaved specimens from the Middle States have the serratures the same as these, and for all the forms of foliage, would be classed together by the observer. On the other hand, there is a broad, and crenate-leaved specimen from Kentucky by Rafinesque,—and one from "the coast of Massachusetts" by Pickering, so much like our picture, that one might assume it served for the copy. Our plate will stand for the true *Teucrium Canadense*,—it is probable that the finely serrate forms will yet be established as distinctly *Teucrium Virginicum*.

In other respects there seems to have been a want of close observation of our plant. Green, in his Universal Herbal, notes that "*Teucrium Canadensis* is very like our *T. Scordium*, but does not creep as that does,—and even the acute Darlington in "Flora Cestrica," refers with some surprise to a farmer's statement that it is a pernicious weed, hard to get rid of; though Clayton, our early Virginian collector, told Gronovius that it had creeping roots, and many good herbarium specimens show that this is really the case.

Dr. Gray gives the range of the species as from Canada to Texas and Mexico, referring to the Eastern portion of the United States. It seems to be very much at home in Ohio, where it is very common. Coulter does not admit it into his Flora of Colorado, though there is a specimen in the Herbarium of the Academy of Natural Sciences labeled "Fremont's Exp." and from "The Platte." The closely allied *Teucrium occidentale* takes the place of our species westwardly; and southwardly, *Teucrium inflatum* comes in.

EXPLANATION OF THE PLATE.—1. Branch from the banks of the Schuylkill River. 2. Upper portion of the same. 3. Drawing of a full-sized flower, just at its full expansion.

WILD FLOWERS AND NATURE.

A SUMMER GUST.

Then, methought,
I heard a sound like the roar of winds
Amid the forest oaks, when the whole sea
Of branches tosses, as the coming tempest
Stoops from its car of clouds, and scourges them,
Till the wide wilderness bows to the dust
Before its anger.

—PERCIVAL.

CARNIVOROUS GRASSHOPPERS.—I was quite interested in an article in a late number of the MONTHLY, touching the carnivorous habits of the grasshopper. Some years since, while watching the holes of a colony of sand-wasps, I turned up, out of one of them, a large footless grub which was promptly attacked by a couple of small red ants. Finding their prey too large to manage, they disappeared and soon returned with an army of companions who fell on the grub, which shortly, as the result of their bites, became covered with drops of limpid fluid. Not long afterwards, a large grasshopper, which I had not noticed, deliberately approached the grub, fastened its labium in its body, and began absorbing the exuded liquids. I left before any of the wasps returned, and am not able to say whether he paid the penalty of his rashness in thus venturing into the lion's den. I mentioned the circumstance to the late Prof. Leidy, who said he had never witnessed a similar disposition in the grasshopper. Crickets, I believe, are highly carnivorous. F. W. LEWIS.

Philadelphia.

CERASUS PENNSYLVANICA. — In the April number, (p. 53) you enumerate, as "Our Wild Cherries," only *Cerasus serotina* and *C. Virginiana*. We have both those species in Maine, very common, the first called "Wild black cherry," the other "Choke cherry." But more abundant than either of these is the wild red cherry, *Prunus* (or *Cerasus*) *Pennsylvanica*, and this is the species that would be in the mind of almost any native of this State when using the term "wild cherry." According to Gray, this species has a range from Newfoundland to North Carolina and Minnesota, but I judge it is not very well known in the State that gave it its name. It is a pretty good stock on which to graft cultivated cherries.

C. G. ATKINS.

East Orland, Maine.

DICENTRA SPECTABILIS.—A correspondent kindly observes:—

"The February number of the MONTHLY is a superb and lovely one. The selection of poetic lines is especially appropriate. Is not capacity for appreciation near neighbor to the same excellence and beauty? The dainty *Dicentra formosa* reminds me of the beautiful *Dicentra spectabilis*, of the same natural order, *Fumariaceæ*. At my first acquaintance with the very attractive flower, the brilliant yet delicate spray making a wreath or half a crown. It was called *Dielytra*, but I soon had to learn its new name, *Dicentra spectabilis*. The admiration it won from all beholders, and the quaint names given it, of Red Drop, Jewel, etc., is a pleasant memory, now, after many years, restored by this illustration."

IMPERFECT PANSY FLOWER.—One of the sunny days in March, in looking over our pansy ground, where seed was sown last August, I discovered a strange little blossom, with pansy-like calyx, small purple centre, resembling an English violet, with one row of dark purple petals, straight, stiff, and pointed as if cut from paper. It grew directly at top of the plant. It withered before I could make a drawing of it, or show it to members of our botanical section. Those to whom I mentioned it thought it a new departure in the pansy family. Can any readers of the MONTHLY enlighten me in regard to it? S. B. BOWERMAN.

Lake Ave. Ridge Road, Rochester, N. Y.

The pansy, being a member of the violet family, may have the general character of the other members, and fertilize occasionally in the bud,—technically be cleistogamous. No case with the pansy can be recalled, but it looks like one of that class.

CYNTHIA.—This genus of plants grows on the hills in this section. There are two species, one *C. Dandelion* the other *C. Virginica*. They are found generally growing side by side on wooded slopes. *C. Dandelion* is the earliest to bloom, beginning in March on the warm exposures among the sand rocks, blooming whilst very small, only a few inches tall and keeping up its growth and blooming until July. They are fond of showing their golden disks to every passer-by. The children call them "little suns." They are among the first blooms plucked by their little hands; and they carry them to the city of crosses, and deck the graves of those departed—those who died young. They have nice long peduncles for boquets, free from side shoots and leaves. The leaves of this species are all radical, linear-lanceolate, with but few lobes, which have the appearance of spines or prickles. They have singular bladder-like tubes, soft and spongy, slightly bitter to the taste, about an inch in their longest diameter, of an oval form, ending the tap root, with fibrous roots above it. The *C. Virginica* grows lower down the face of the hills, is taller, about two feet high, with a similar flower. It loves moisture and is more often found on northern slopes. Its root-leaves are broader, with winged petioles, and has from one to two clasping stem leaves and involucre at different heights on their stems and peduncles, two to five flowered. Its period of blooming is throughout June and July and it lights up the hills with the golden orbs. All the roots of this plant are fibrous. Both species are perennials. They belong to the order *Compositæ*.

F. K. STEELE.

Festus, Jefferson County, Mo.

CLEMATIS VERTICILLARIS. — I send you several specimens of *Clematis verticillaris*, D. C., or *Atragene Americana*, Sims, collected by myself, May 12, 1898, at Conewago, Lancaster Co., Pennsylvania, where it grows plentifully. It is one of the handsomest of our wild, northern vines, and has its leaves in virticils or whorls, flowering about the middle of May,—sometimes earlier,—and in September has large, light purple-blue flowers. The styles are large and produce handsome tufts.

It was not known to belong to Lancaster County prior to 1869. Since that time it has been found growing wild in several different localities, mostly in stony places, making a handsome addition to our local flora.

I was almost too late, as most of the flowers had fallen off. I have collected it as early as the 29th of April, never later than May 14th. The fruit I send was collected at Conewago in 1891. MRS. AMELIA F. EBY.

Lancaster, Pa.

The early blooming of this *Clematis* has been overlooked. The fact should give it a claim on cultivators in addition to its beauty. In the writer's younger and ardent collecting days, it was found in some abundance on Monocacy Hill, near Reading, Pennsylvania.

FASCIATED BRANCHES.—I saw a very interesting specimen of fasciation, this morning, which had been sent to the Botanical Department of the Ohio State University, by Miss Ruth E. Brockett, of Rio Grande, O. It was a thistle plant, nearly four feet high, with a flattened stem its entire length. This stem, at about a foot from the top, reaches a width of six inches, where it divides into several fasciated branches, each terminating in a head of flowers, which also, in most cases, are strongly fasciated. The stem is covered with leaves which are abnormal only in their excessive number and somewhat slender shape.

MRS. KELLERMAN.

Papers discussed before the American Association for the Advancement of Science, and the Academy of Natural Sciences of Philadelphia, and published in their Proceedings, many years ago, show that fasciation is the result of a low vital power. This is the reverse of popular opinion, which regards it as an extra effort of life-force. What causes this depression, remains to be discovered.

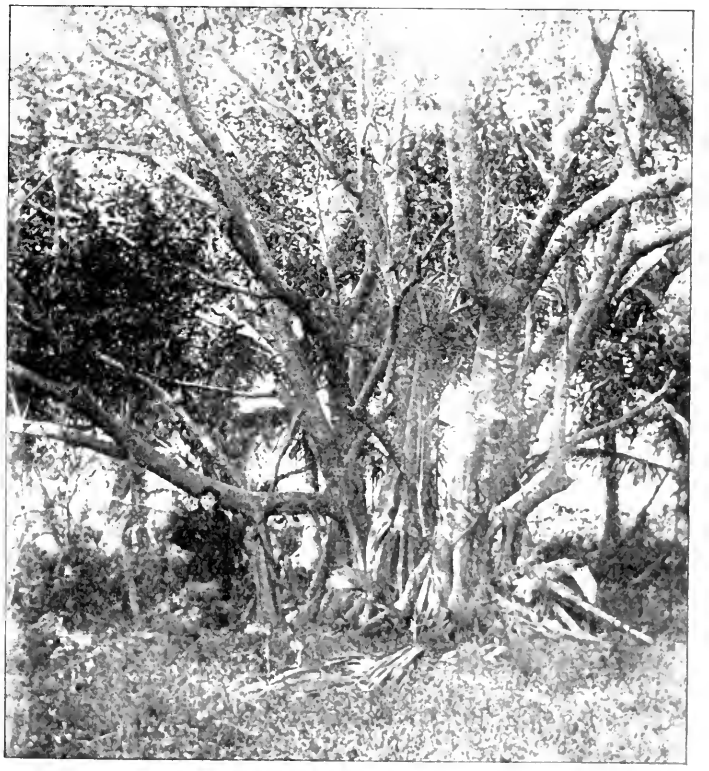
WATER IN PLANTS.—When a grape vine, or some other plant, is cut back in early spring, what is known as "bleeding" often occurs. The quantity that flows is often wonderful. As much as a pint of liquid a day has been collected from a stem not much thicker than one's finger. As the stem itself would not hold all this liquid at one time, it shows that the roots are actively at work. They are the real pumps. The plant is merely the distributing pipes.

LUMINOSITY IN PLANTS. — Many instances have been recorded of flowers being luminous at night. They only seem to do this on rare occasions, hence they are to be envied who have the good fortune to witness the phenomena. Though the writer has often endeavored to get fortune's favor, she has never smiled on him but once, when he saw the phosphorescent glow from fungi in a hollow tree, just like the glow of a match when rubbed in the dark. A German naturalist, Herr Haggren, seems to have met with a number of instances in his country,—or rather the night watchman he employed did. He concludes the phenomena is more likely to occur when it is dark after rain following a sunny day. July and August gave the most instances. Occurrences began soon after sunset, and there were none after dawn. He could not decide on the cause of the luminosity.

MANGROVE SWAMP.—The lover of popular science derives much pleasure from noting how the most stupenduous operations of nature are often dependent on causes, seemingly to man, of the most trifling character. Darwin, has shown us, for instance, what a wonderful agent the humble earthworm is in preparing the fertility of the earth for the agriculturist,—and even abstractionists have taught us how one single feather may break a camel's back. The Mangrove, *Rhizophora Mangle*, is another illustration. Most intelligent persons have heard of the Mangrove Swamps of Florida, and other subtropical and tropical portions of the earth. It is one of nature's agents in turning maritime swamps and shallow lagoons into dry land. The plant not only perfects the seed in the seed vessel, but the seed sends out a long root before it is cast off from the parent tree. When it falls in the water or marshy ground, this root loses no time in penetrating the mud, and after the tree has developed it sends down rooting branches in every direction. These hold fast drift matter and refuse of every kind till eventually the surface is high and dry above the water level. The illustration was taken by one of the conductors of MEEHANS' MONTHLY in a Florida swamp.

THE TOAD'S FAVORITE FLOWER.—A correspondent of the *Popular Science News* had a pet toad which was kept in a small greenhouse, where it was particularly useful in devouring noxious insects. It made its home in the earth among the roots of a Calla Lily. Though moved continually to other quarters quite as comfortable, it would vacate and be always found in its favorite lily home.

A ROSE CONGRESS.—The universal popularity of the rose is evidenced by the fact that a "congress," in which the rose only is to be discussed, covering the 10th to the 12th of July, is to be held in Gotha. The proceedings will be published in the *Rosen-Zeitung*, a publication wholly devoted to the rose.



IN A MANGROVE SWAMP.

GENERAL GARDENING.

THE RUSTIC ARBOR.

The rustic arbor, which the summit crowned,
Was woven of shining smilax, trumpet-vine,
Clematis and the wild white eglantine,
Whose tropical luxuriance overhung
The interspaces of the posts and made
For each sweet picture, frames of bloom and shade.

—BAYARD TAYLOR.

RAISING CONSERVATORY PLANTS FROM CUTTINGS.—It is a common error, on the part of amateurs, where propagation has never been extensively followed, to make most curious looking cuttings or "slips," some of which, by fortunate conditions or because they are hard to kill, take root and grow.

As a general rule, the proper wood to take for propagation is growing shoots. The best wood is not very soft nor very hard, but rather the young growth that snaps when bent instead of requiring a twist to be broken. This is only a general rule, and the practical application of it will soon define the few variations.

The length of the cutting also depends on the individual plant; but amateurs usually err in taking off a long stem, which has to be supported until it can make root.

Roots are nearly always made just below a leaf joint—or node, as it is properly called—and so a clean cut through the stem should be made just there to facilitate rooting.

As previously stated, the cutting should not be burdened by unnecessary wood or foliage, which will at once droop when support is lacking. Therefore, but one or two leaves of average size are sufficient to have remaining. In the axils of each leaf—the junction of leaf-stem and branch—are buds, which must be preserved, as these are to furnish the new growth. These buds are sometimes very minute and not easily discerned, but are always present if not destroyed.

Some propagators pinch out the soft termination of the stem; but if the entire piece is short, this may not be done. Where the former mode is adopted, the side or previously dormant buds are relied on for future growth; but undoubtedly the other method insures more rapid growth after root has been made, the only objection being that surrounding conditions of moisture and shade must be more perfect to prevent the withering of the young shoot.

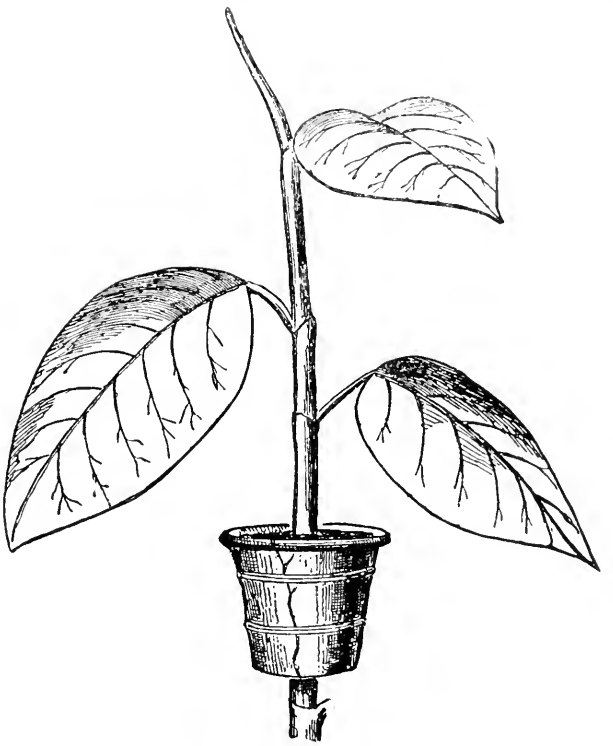
The best atmosphere for cuttings is that furnished by aid of a bell-glass or other glass covering. The heat of direct sunlight is welcome provided the leaves are not deprived of a moist atmosphere, which is necessary to keep their cells in good condition. To have these conditions, place a bell-glass completely over the cuttings, permitting the edges to rest on the soil in the pot or bench. Water the cuttings with a fine sprinkler as often as it appears necessary, which will not be so frequent following this method. Of course, ventilation must be given at times by tilting the glass occasionally.

Where close coverings, such as described in the preceding paragraph, are not used, the cuttings should be shaded or else very frequently watered.

Clear sand, closely packed, is best for cuttings. There are many grades of sand, and the finest and "cleanest," permitting of a rapid passage of water, is best. Drainage, in most cases, is a necessity, though in some instances (as with oleander) cuttings may be rooted in bottles of water.

POTTING CACTUSES.—Those who love the spiny offspring of the desert, will do well to remember that a cactus is the child of the sun, and flourishes, most supremely blest, amid the dry, hot sands of the desert, where it gets no more water, generally, than the Arab who said to Sir Samuel Baker, "You have saved my life," having snatched from him and drank the scant two quarts of water in which Sir Samuel and his wife had allowed themselves the luxury of a bath. Their attendant had expected to have helped himself, but as Sir Baker kept the water-key, he was fain to refresh himself as best he might. E. E. ORCUTT.

GOOD USE FOR BROKEN FLOWER POTS.—A correspondent of the London *Gardening Illustrated* had a flower pot broken in halves, and made good use thereof to propagate an Indian Rubber plant, as shown in the annexed sketch. It will be noted that the pot is applied near the end of the branch,—only at the third leaf from the tip. The branch has to be slit at the point where it is enclosed by the broken pot,—and a wedge inserted to keep the tongued slit apart.



GOOD USE FOR BROKEN FLOWER POTS

GROUND MOLES.—What progress has been made since 1827, in the art of destroying ground moles?

Gardeners know ground moles to their cost, and the learned know how they have eaten potatoes this year. However, neither one nor the other seem to have made much progress in becoming acquainted with them nor finding out how to destroy them. My grandfather knew as much about it as his grandson, and, in 1822, M. Verardi published the recipes which ran through the journals for a hundred years. Judge for yourselves, my dear brethren.

"When ground moles are numerous in the garden, and when they are not numerous also, one may be contented with throwing into their holes some water containing a few drops of oil. When they find themselves inundated, they come out, impregnated with the oil floating on the surface, and perish on the field; in light ground and in soils, this method would be useless, because the water would filter across the walls of the holes and not go to the bottom. When there is a large quantity of them in a bed where they are attracted by heat from the manure and by insects, this method may still be employed, but with some modifications. The bed is dug up, and the soil and manure turned over, the frightened moles are forced back into the holes they have frequented at the bottom of the bed; upon carefully raising a small portion of the surface of the ground, their galleries may be discovered; throw a sprinkling of water over these haunts into which a glass of oil must first be spread, and they will perish as we have said before.

But when these animals have multiplied very much, these methods are insufficient, and we must resort to other proceedings. In the fall, a month before the frost sets in, squares are made, in each of which are two or three holes of about three feet in diameter and about the same in depth; these are filled with warm manure to within six inches of the edge and covered over with earth. At the first signs of freezing, the moles will reassemble here in large numbers and become enfeebled (torpid); when the ground is frozen hard, they discover the manure, go out of the hole, and if one looks carefully he may catch every one of them.

Another way is used by other gardeners to as much advantage. They make boxes of spruce eighteen inches long, as many in depth, and any determined width; the boxes are filled with warm manure and forced easily into the ground to five or six inches. Every fifteen days they are taken up, first taking off the earth on top of them, forcing the moles to retire to the bottom; where they are found and killed, the box is then replaced.

Finally, there is still another way which is

used,—not only to destroy moles, but all insects and animals which injure our gardens. In a flat strip by the side of a wall, bury some varnish pots or bell-glasses reversed, deep enough that the edges will be one or two inches below the surface of the soil; pour into them three or four inches of water,—moles, toads, and even house mice and field mice, promenade there during the night, and fall into the vases, unable to climb out over the sides and are drowned. —From *Lyon-Horticole.*

WIRE FENCES.—The question of suitable fences, whether for strength and durability or for ornament, is one of considerable moment, and one that should be dealt with thoroughly.

Possibly iron fences are most durable and ornamental, but the expense is greater, and their style or formation not just desirable for certain positions.

Then wire fences come forward for attention. Recent improvements, resulting from close study of varying needs, bring them to the front rank among fences. Pioneers in these improvements are the Page Woven Wire Fence Co., of Adrian, Michigan, and the many recommendations of their goods, and the results of severe tests of endurance, call for a favorable notice. Their chief claim is for strength, and this is founded in the peculiar construction which gives a rebounding power to the fence. By arrangement of the strands of wire composing the fence, it is easily made proof from the passage of animals of any size, without making dense meshes higher than necessary. It has the feature of coming in any desired height, still maintaining perfect strength.

INJURIOUS WEEDS.—From time to time this country is startled by publications issued from high schools and colleges, as to the appearance of this or that weed in some localities and warning cultivators against them.

Learned and long descriptions are given of these particular weeds, and general alarm is excited by a supposed new trouble. Very few of these new weeds are worthy, however, of a thought, so far as particular cultivation of the soil is concerned The cultivator expects to hoe and cultivate among his crop, and one weed is no more to him than another. This is especially true of annual weeds, and which do not flower until after the cultivator has been through. The Prickly Lettuce is an illustration of this,—its botanical name is *Lactuca scariola.* Continuous warning against its appearance is heard everywhere; but it does not come into flower until July, and long before that the cultivator has destroyed it. No cultivator need fear any annual weed. Serious trouble comes from those which have running root stocks. In this case, every little piece of root will make a new plant. In this list we might name the Canadian Thistle, the English Bind-Weed—*Convolvulus arvensis*, the so-called Sachaline—*Polygonum sachalinense*, *Solanum Carolinianum* and the Couch grass—*Triticum repens.* And even these can be destroyed by two or three successive hoeings or cultivatings. It is an exceptional case when a plant lives without leaves during one season. The old question of dealing with destructive weeds is a very simple one,—we have either to hoe them out before they have a chance of making seeds, or preventing them from having perfect leaves during one season's growth. The intelligent cultivator knows this so well that he is not alarmed by the appearance of a new weed, but rather enjoys it, as it adds somewhat to his botanical knowledge.

VARIATIONS IN GARDEN EVERGREENS.—Some years ago, considerable interest was exercised by the introduction of an arbor-vitæ through the famous firm of Ellwanger & Barry, and which they called Tom Thumb. The leaves were not appressed to the branches, as in the ordinary arbor-vitæ, but were free and heath-like. Indeed, about the same time a similar form was introduced by Booth, of Hamburg, who named it *Thuja ericoides*, which signifies a heath-leaved arbor-vitæ. Even profound botanists at that time doubted the origin of this peculiar form from the common arbor-vitæ. The first to say conclusively that they were undoubted seedlings from the well-known species, was Mr. Josiah Hoopes, of West Chester, who, in his valuable work, "The Book of Evergreens," clearly pointed this out. It is now well understood, that all plants of the arbor-vitæ and juniper family have these free leaves during the first few months of their existence. Some of the individual plants, however, carry this infantile character with them through life, or, at least, until they are con-

siderably advanced in years. Indeed, some plants, like the common cedar, carry both forms of foliage with them through life,—the weaker branches bearing the free leaves, and the stronger ones having them appressed to the branches. When we speak of weak leaves, we indeed characterize the whole behavior. The class of evergreens with free leaves were aptly styled, by Dr. Gray, "the imbeciles of the evergreen kingdom." A large number of these forms came from Japan, and have received distinct botanical names. The beautiful *Retinispora squarrosa* is well-known and popular, but this is only an infantile form, carried along with mature years, of *Retinispora pisifera*. When the plants reach some fifteen or twenty years of age, they will frequently send out strong branches with appressed leaves. When they reach this condition, they grow with immense rapidity, which is another illustration of the fact that the retention of the free-leaf character is to be accounted for by the infantile weakness, out of which they have not grown.

Climatal Conditions.—When we say that this plant or the other plant is adapted to certain climates, the idea of temperature is the one which is usually prominent in the mind. But this is only one of the necessary conditions which come to make up what we understand by climate.

Atmospheric moisture is an important consideration. Some plants thrive better where the atmosphere is continually moist; while others prefer that which is warm and dry. This is the reason why plants from our mountains thrive better in England than they do in lower altitudes in our own country. The higher elevations are usually comparatively damp, and the moist atmosphere of England consequently helps to make up their natural climatal conditions. Very often there are other elements, which come to make up the natural surroundings of which we seem to be ignorant. For instance, one would never think that the Palmetto Palm, which thrives so well in the Carolinas, Louisiana and the lower Mississippi regions would not do well in California; and yet it is said, that although many other palms thrive as well in the temperate parts of California as they would in their native homes, the Palmetto of the Atlantic States refuses to thrive.

Thinning Out Avenue Trees.—A correspondent writes:

"We have an avenue of Sugar Maples, set out about 60 years ago, 40 feet apart. We have been advised that they are suffering for light and air and should have alternate trees cut out.

As this would involve at least a temporary impairment of the beauty of the avenue, we should be pleased to have thy opinion as to the desirability of the removal.

The trees seem healthy, and questions involved are:

1. Will they fill the gap?

2. Will the avenue as a whole live longer by the cutting?"

Trees 40 feet apart, with nothing front or back of them, would suffer materially, though 60 years planted, by being that much near each other. The branches within the line of the trunks probably meet, and have less vital power than the others. Cutting away alternate ones would expose these branches to the wind and weather, and the trees would look shabby on that side for years.

The writer has never known trees to be much benefitted by thinning out, after the vigor of youth had passed. They usually suffer more for the want of food, at 60 years, than from any other trouble. A good surface dressing of manure in the fall would help them more than anything else.

Root Suffocation.—It is difficult to get people to understand that trees can die from drowning just as animals can. Trees feed primarily by the roots, but there must be a certain amount of oxygen in the soil to enable them to make use of the food. Standing water prevents the action of the life-giving oxygen. A Boston correspondent refers to two large Horse Chestnuts which were moved last spring with the greatest skill, but they died.

In the fall, an examination was made, and the holes found to be full of water within one foot of the surface of the ground. The holes were really flower pots without the necessary holes in the bottom to allow the water to escape. There can be no better lesson in gardening than to be continually remembering why it is necessary to have a hole in a flower pot!

SHADING HEDGES.—A correspondent says: "I covered a honeysuckle hedge with an old tennis netting to keep the balls out while playing. Removing it in part a year or so later, I noticed that the vines seemed affected; a part of the hedge still covered,—say four years,—by the remnants of the netting, is nearly dead in appearance. Can it be that a netting with meshes an inch across, partly over a healthy hedge, would cause this?"

Partial shade, by so far as it is shade, is injurious to young growth. It is for this reason that it is injurious to permit vines to scramble over trees. The trees that support the vines get some light for their young growth, as well as do the young growth of the vines; but the supporting trees soon pass into decrepitude. Honeysuckles are often permitted to run over hedges. The writer has one in mind where only three years ago one was permitted to spread a few of its branches over an osage orange hedge, one of the most vigorous of any kind of live fence or hedge. There were but a few branches the first year spreading over the osage plants, but the ill effects were plainly seen. The honeysuckle is still there, but the osage plants are nearly dead. The fact is that the young growth of any tree or shrub will not willingly share its right to the whole field of light it desires.

OPEN-AIR CULTURE OF THE COCKSCOMB.—The cockscomb is usually treated as a pot-plant. It does not seem to be generally known that it thrives in our gardens. During the hot and dry summer weather, there are few things that will continue to give so much satisfaction as this flower. Indeed, the hotter and dryer it is, the more it seems to flourish. Many brilliant effects in ornamental gardening can be made by the judicious employment of this flower in massing.

MUD AS A FERTILIZER.—There seems a difference of opinion, among those who have tried mud from river fronts, or the beds of streams, as to its value. Some report profitable results—others find it worthless. There are various kinds of mud. When every particle of vegetable matter has been washed out, it can be of little value. It should be worth something when it contains a good proportion of vegetable matter.

PREMATURE FALL OF MAPLE LEAVES.—During the summer of 1897, many specimens of fallen maple leaves were sent to MEEHANS' MONTHLY with inquiries concerning the cause for their dropping very early. It will be recalled that that season was remarkable for the great number of honey aphis which covered the leaves of many trees, making the leaves sticky with the exudations of that insect. The falling of the leaves was credited to the aphis, while in reality it was due to a fungus attack at the base of the petioles—or juncture of the leaf-stem and branch. The attacks in no instance were sufficient to do any permanent injury to the trees, and were merely the cause for an alarm. The remedy for all such fungus ills is Bordeaux mixture, sprayed early. These troubles did not seem to affect lindens and sugar maples. The season was a rather unusual one in character, and a repetition of these troubles need not be greatly anticipated.

PEAT SOIL.—Referring to the January issue, a correspondent observes that the article on Peat Soil "was something very desirable for those I know who are desirous of raising delicate woodland flowers."

It must not be forgotten that air is just as important to roots as moisture. Delicate-rooted plants like azaleas, rhododendrons, cannot force their way through compact soil, as plants with stronger roots can. There is nothing suits them better to this end than the sponginess of peaty soil.

TO DESTROY ANTS IN LAWNS.—The following recommended formula for the destruction of ants is given in response to the inquiry of a subscriber: Mix one tablespoonful of bisulphate of carbon in two or three gallons of water. Pour this into holes six inches deep and twelve inches apart, filling in the holes immediately after this has been done. The fumes penetrate the soil and destroy the ants.

WATER LILY CULTIVATION.—There is great enjoyment in the cultivation of water lilies. They can be easily grown in tubs on a small scale,—as on a larger scale in gardens. Mr. Geo. B. Moulder, of Smith's Grove, Kentucky, deserves much credit for the efforts he has made to popularize this beautiful department of gardening.

NEW OR RARE PLANTS.

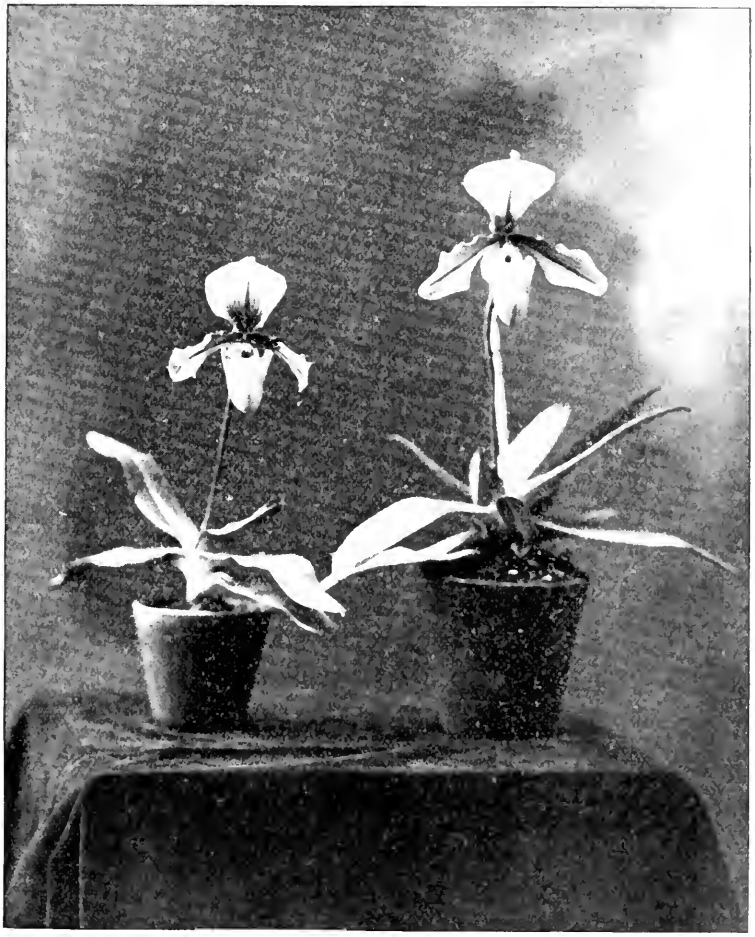
HYBRID CYPRIPEDIUMS. — I send you with this a photograph of two seedling Cypripediums which originated here at the greenhouses of S. R. VanDuzer, Esq., of Rosenhof.

The seeds of these were sown December, 1894, and the plants flowered in November, 1897. The seed-bearing parent was *C. Harrisianum*, and the pollen parent was *C. Spicerianum*. The leaves of the one to the left in illustration are dark, lurid green, slightly ruled and closely resembling those of its pollen parent, *C. Spicerianum*. The flower scape is 8 inches long, dark brown, stout and stands erect without support. The predominating white in the dorsal sepal is very clear; the base of the sepal is green, overlaid with purple, which is shaded off at the extreme upper edge to a beautiful rose or light purple. The petals are undulated, like its pollen parent, green at the base and yellow at the apex, with purple lines running through the whole. The labellum is purplish brown or brown under purple lines. This flower is in many respects intermediate between its parents. The seedling on the left in illustration has numerous leaves which are beautifully tassellated, light and dark green, like its seed-bearing parent, and, like that variety, is a free and robust grower. The flower scape is 12 inches high, dark brown and covered with black hair. The flower, in size and general appearance, is much superior to either of its parents. The dorsal sepal is 2 ½ inches in width and 2 inches deep, reflexed at base. The predominating color is white with green base, overlaid with brown spots and pencilled with lines of rosy purple. The petals are 3 ½ inches long and 1 ⅝ inches wide, pale yellow in centre with a band of purple along the margin,—and all beautifully lined with green and brown veins. The labellum is large, in shape like *Harrisianum*, purple in front, shading off at the point to light brown. This is a large, massive flower, which stands out quite prominent among other Cypripediums.

DUNCAN AIRD.

Newburgh, N. Y.

HAIRY CHRYSANTHEMUMS. — The hairy-flowered chrysanthemums, which started in American popularity with the variety Mrs. Alpheus Hardy, has proved even more popular in the Old World, mainly through the industry of French florists. A large number of varieties now appear in foreign catalogues.



HYBRID CYPRIPEDIUMS.

CHRYSANTHEMUM FRUTESCENS HALLEANA AUREA.—The Yellow Paris Daisy is a fine thing for private places, where good flowers are always in demand. It is far preferable to the White Paris Daisy, as the stems are much longer, and the flowers will easily last a week or ten days in rooms.

If the cuttings are rooted about the end of July, that will be early enough. Pot on, as they need it, till they are in 6 or 7 inch pots, (good, turfy loam is the best for them). Keep all flower buds pinched off till November, when you will be astonished at the number and size of flowers you can cut from one plant, right through the winter, with the help of liquid manure. F. IBBOTSON.

Roxboro, Philadelphia.

It is to be hoped that the improvements in this species will end with the "Aurea," or botanical names will get as long as some common names, where such as "Robin run-in the hedge" or "Old-man with-a-water-pitcher" often try the patience of the listener.

THE HARDY FLOWER GARDEN.

THE AMERICAN CRANE'S BILL.—The American Crane's Bill, *Geranium maculatum*, has already had a place among our colored illustrations, and many have learned to love it who have never seen it grow. Those who have seen it and admire its wild beauty, will be pleased with the evidence that a little civilization adds still more to charms that the reproduction, on page 109, from a photo., shows it to be capable of. It was kindly sent to us by Mr. Harry Wilbur, of Bethlehem, Pa., who describes it simply as "growing in his yard."

WHITE FORGET-ME-NOT AND CLEMATIS VERTICILLARIS.—Specimens of both white and blue forget-me-nots have been received by MEEHANS' MONTHLY from Mrs. Seliger, Hartford, Conn. They were sent to show the contrast, which is indeed pleasing. The white form is not new, but is very uncommon in gardens. It is pure white, and quite the equal of the blue; but sentiment connected with the well-known form will doubtless prevent its ever becoming more popular.

The perennial species of *Myosotis* are worthy of any garden. They prefer a slightly shaded and moist situation. The shade need not necessarily be dense; that furnished by other perennials of tall growth is sufficient.

From the same source, are also received, flowers of *Clematis verticillaris*, an account of which appears elsewhere in this issue.

The thanks of the Conductors are extended for the specimens. Such kindnesses are always appreciated.

FLOWERS IN THE FERN BORDER.—A well-arranged bed of ferns is doubtless much more handsome than when flowering plants are introduced to the same bed; but where there is room for a break in the bed, a choice selection of woodland flowers may be utilized. Such as thalictrum, spiræa, columbine, Solomon's-seal, bleeding-heart, anemone, May apple, tradescantia, trillium, polemonium, lily-of-the-valley, spring-beauty, bird's-foot violet, etc., can be introduced to make the border very attractive. The height attained by the plants in the foregoing list varies according to the species and location, but will be found something like the order in which they are named.

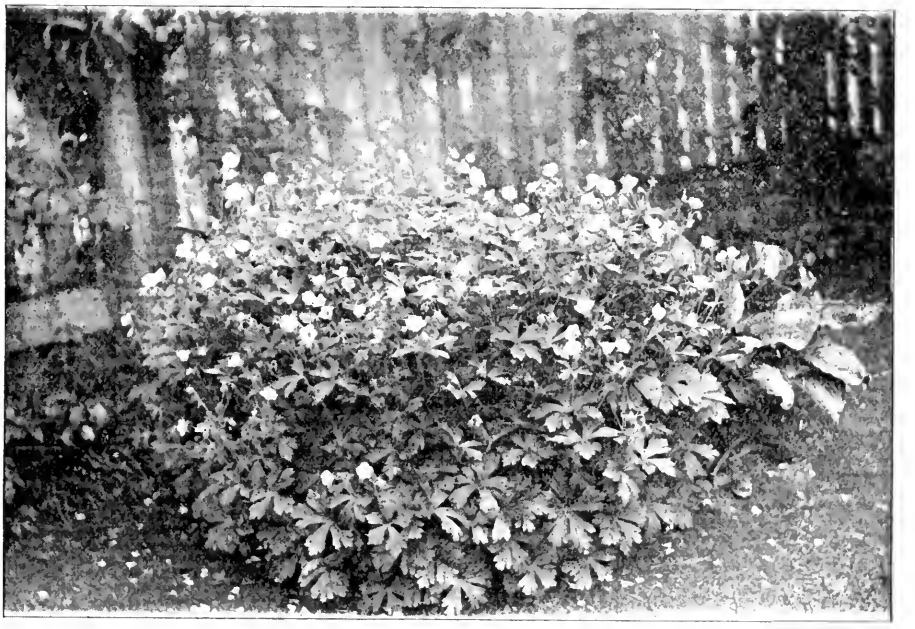
PÆONIA TENUIFOLIA.—Among pæonies, the finely divided foliage of *P. tenuifolia*, coupled with the rich red color of the flower, nestled in the foliage in early spring, draws the most attention. Unfortunately, the single flower is rather evanescent, but the foliage makes up for this, being effective at all times, and extremely useful for working in bouquets. Florists are already using it extensively for forcing purposes; but it requires gentle pushing. There is also a double-flowered form. They seldom grow over eighteen inches in height.

FRUITS AND VEGETABLES.

APIOS TUBEROSA.—This beautiful, wild, climbing vine produces a root as large as a hen's egg. The root was usually used by the Indians as an article of food. When cooked, it is equal to any vegetable cultivated, so far as the flavor and attractive taste is concerned. It is much to be regretted that no attempt seems to have been made. Though with the large list of native edible roots, to introduce this into our gardens, would doubtless yield a good margin for some improver in this line.

THE POTATO STEM-BORER. — Frequently a whole crop of potatoes will show decay at an early stage of their growth. This was at one time believed to be due to what was called a sun scald. Some forty years ago, a noted entomologist of Germantown, Philadelphia, Miss Margaretta C. Morris, discovered that this was rather from the work of a small beetle, a stem-borer, which was in scientific language named *Doryphora decemlineata*. Since this knowledge has been gained, our cultivators have kept the insect down pretty well by pulling up the stems and burning them as soon as evidence of decay appeared More than this, the application of Paris Green to the potato plant in order to destroy the Colorado Beetle seems to have had an influence in restricting the work of this smaller beetle, although it usually gets in its work earlier. At any rate, the potato grower is less troubled by the ravages of this insect in these times than at the time when its presence was first made known. It appears, however, that it has taken its course eastwardly, and the French growers are getting as nearly alarmed at its increase in France as they were when they first discovered the Phylloxera on the grape. Officials from many places in France are addressing the Minister of Agriculture as to the proper method of fighting these ingenious little insects. We prepare this paragraph in the interest of our French exchanges. With our experience, they ought to have very little difficulty in guarding themselves against this trouble.

SEEDLESS RAISINS. — In California, there were experiments in stoning raisins so as to have them as free from seeds as the ordinary currant. Success has followed, till now, seeded raisins are becoming an important item among the fruit industries of California.



THE AMERICAN CRANE'S BILL. -SEE PAGE 108

GOOD VARIETIES OF GRAPE. - Some fruits seem to degenerate more rapidly than others. New varieties are continually called for to replace the old. But among grapes, some of the oldest are found remarkably reliable. The Brighton, Concord, Lindley, Diamond, Moore's Early, and Worden, are still generally popular.

A FRUITFUL APPLE TREE. — In the orchard of Mr. Lucy, at Puyallup, Washington State, is one tree, 5½ feet in circumference, 35 years old, of the variety known as Waxen, which has been bearing between 50 and 75 boxes of apples annually during the past 20 years.

CULTIVATION IN THE VEGETABLE GARDEN.—The smaller the garden, the less dependence, frequently, is placed on perfect cultivation. In time of drought, when weeds are not making trouble, the hoe must be used just as frequently as in rainy weather, when the weeds attempt to rob the plants of food; but in the former case, it is in order to keep the soil loosened up both to admit air and preserve moisture.

Good cultivation is particularly essential where vegetables are grown for their foliage or root. Lacking this, the plants are likely to be stunted and minus the proper flavor of well-ripened growth.

There is a decided art in hoeing. The soil should be stirred and not scraped; but some plants make surface roots, and discretion must be used here not to hoe too deeply. Keep the hoe sharpened, when it will cut instead of scrape.

THE BAHIA ORANGE.—The Navel, or (correctly speaking) Bahia Orange, was introduced into the United States by Wm. Saunders, Esq., Sup't of Grounds, etc., Dept. of Agriculture, Washington, D. C. One of the original trees was sent to Riverside, Cal., and is still standing. The "Riverside Navel" is a local corruption, Mr. Saunders having introduced the orange as the "Bahia," after the island where the variety was found. Nothing is known of its prior history. Riverside is now but one of the many large orange-producing districts of California, but it has a possible 9,000 acres planted to this variety alone.

EMORY E. SMITH.

ONION CULTURE.—Most bulbs want a rest when the weather gets warm or the temperature dry. In many parts of the United States, it takes two years to raise a crop of onions, on account of this fact. The onions are sown early in spring, and in a few months get the size of large marbles. When the leaves wither and the bulbs go to rest, they are then in the condition known in the trade as onion sets. The next spring they are again planted and soon become marketable onions. But where the climate is moist and considerably cool, the onion will go on growing the whole summer season, and the large roots are attained the first season. Those who can discover locations, may make onion culture far more profitable than is possible in the two-years' course. There might be companies formed in this case, as in the case of beet growing or celery culture. The onion prefers a deep, sandy soil; but yet it must be one which has been packed hard and as solid as possible before sowing the seed. In gardens, where onions are sown in narrow beds, with a path-way between the beds, the largest onions always come from a few seeds that may have accidently fallen into the hard, trodden path-way.

HOT WATER DESTROYS INSECTS.—A temperature of 130 degrees will destroy insects without injuring vegetation. In small greenhouses, the Red Spider can be easily destroyed by inverting the infested plant for a second or two in a tub of hot water. It is a good thing with which to destroy the Cabbage Worm. If the water is just at boiling point, it will be about the right temperature when it reaches the cabbage through a fine hose or sprayer.

OSBAND'S SUMMER PEAR.—Very few early pears are considered first-class either in size or flavor; but even a poor pear is welcome at the advent of the pear season. Osband's Summer Pear is believed to be the earliest that commands attention by its size and good flavor; and although not the earliest to ripen, it is not long after the first to appear. It is a small pear, although not a very small one.

SCARLET RUNNER BEAN.—In the Old World, the Scarlet Runner is as popular a pole bean as the Lima is with us. The beans are used green, as we use the Dwarf or Bush Bean. Possibly, our climate is too warm for it, in summer. But it is not in use anywhere, so far as is known, except occasionally as an ornamental vine. The succulent beans are often ten inches or a foot long.

THE NEWTOWN PIPPIN APPLE.—This is one of the apples which do not thrive well in a general way; but succeed occasionally in special localities. Wherever it does succeed, the owner finds himself in possession of a valued treasure. In an orchard belonging to Mr. Innis, near Columbus, Ohio, there are ten acres of this variety alone, which is said to be quite successful.

BIOGRAPHY AND LITERATURE.

THE ROSE.

And when the nightingale had finished,
In the linden tree its sweetest lay,
Then at the holy hour of morning,
The red rose woke to light of day.

And by the rays of morn elated,
That creep through twigs and leaflets green,
It shyly greets, with many blushes,
The world of God for first time seen.

Now in its golden eye doth tremble
A pearl so silver-like and clear;
It is the praise the flower offers
Up to the Lord, in higher sphere.

And to complete this charming wonder,
Lo, nature on its brow doth kiss
The sweet and all enchanting secret,
Of knowing not how sweet it is.

—FERDINAND STOBLE.

H. D. WIREMAN, Translator.

GARDEN MAKING.—By L. H. Bailey, published by the MacMillan Co., N. Y. This is a small volume of 44 pages, brimfull of suggestions for the utilizing of home grounds; and constituting a valuable hand book of reference for the many questions in gardening continually arising to puzzle the home gardener.

EDWARD TATNALL.—The noted botanist and hoticulturist, Edward Tatnall, of Wilmington, Delaware, died suddenly on the 31st of May, aged 80 years.

He was an author of local Floras, a leading supporter of a natural history society, and the father of the great American industry in parlor matches. For many years he was superintendent of public parks in Wilmington. Few men have led more useful lives,—few have died more sincerely regretted.

RESIDENTIAL SITES AND ENVIRONMENTS.—By Joseph Forsyth Johnson,—published by the A. L. de la Mare Printing and Publishing Co., New York. Mr. Johnson is well-known by his work "Natural Principles of Landscape Gardening." The present work is of the same character, though dealing more with practical details than abstract principles. A point in laying out grounds is seldom thought of, namely, how to make the grounds of our neighbors, or of natural scenery belonging to others, come in to add to the beauty and general improvement on our properties. This is well treated of here under the newly-made fashionable term of environment. Any well stocked library would be enriched by adding this beautiful volume to it.

THOMAS NUTTALL.—M., Philadelphia, says: "In reading a local notice of the great botanist Nuttall, I learn that he was a poor boy who came to this country to seek his fortune. He got employment as a printer. One day he was interested in the growth of our Virginia Creeper, and took it to Dr. Barton. After this visit, he became interested in botany, and subsequently famous in that line. His works show him to have been a Greek and Latin scholar, and, indeed, a man of high education. Do you know where he pursued these studies?"

It is to be feared that this story about Nuttall will have to be stored with the wonderful tales told about all great men, saints and sinners, and which are known as the "truths of history." Nuttall himself, in a publication he made in America in 1853, when about leaving the country, as he thought, forever, says: "Thirty-four years ago, I left England to explore the natural history of the United States." A poor ignoramus, with no taste for natural history until a Virginia Creeper struck his attention in Philadelphia, could hardly have penned such a sentence.

WISTERIA OR WISTARIA.—A subscriber to MEEHANS' MONTHLY called my attention to an article, in the May number of that magazine, entitled "Wistaria or Wisteria," with the request that I should answer it; permit me therefore to say that Nuttall's reason for naming the plant *Wisteria* is quite apparent, as I shall endeavor to convince you. The late Mr. Charles J. Wister, of Germantown, being an intimate friend of Nuttall, as well as a relative

of Dr. Caspar Wistar, called the former's attention to the fact of his having named the plant *Wisteria* in honor of the eminent professor, notwithstanding that he spelled his name with an *a*. Nuttall said that he was quite aware of that, but since the families of Wistar and Wister were one, and that *Wisteria* was more euphonious than *Wistaria*, he had preferred and adopted the former. W. J. C.

Fiat justicia, ruat cælum.

Germantown, Pa.

Nuttall says, in a foot-note to the description of *Wisteria*, "I name it in honor of Dr. Caspar Wistar." If he had added "but for the sake of euphony, I changed the spelling to *Wisteria*," there could be no excuse for Hooker, Gray, Bentham and others supposing it to be a typographical error, and changing it to what the foot-note, as it stands, clearly suggests it to be.

NATIVE COUNTRY OF THE INDIAN CORN.—The Indian Corn, *Zea Mays*, has not been found wild in any country yet explored. Botanists are coming to the conclusion that it may be a development under ancient Mexican civilization from *Euchlæna luxurians*, a coarse Mexican grass, the botanical characters closely related with that of maize. This grass is known under the Mexican name of Teosinte.

GENERAL NOTES.

COLORED PLATES OF NATIVE FERNS.—For the particular benefit of those most interested in matters pertaining to ferns, a complete list of plates that have appeared either in the "Native Flowers and Ferns of the United States" or MEEHANS' MONTHLY, is here presented. Other plates will appear from time to time.

Adiantum capillus-veneris. Vol. II, Series 2.
* " pedatum. Vol. III.
Aspidium acrostichoides. Vol. II, Series 1.
" cristatum. Vol. II, Series 2.
" fragrans. Vol. I, series 2.
* " Goldieanum. Vol. VI.
* " marginale. Vol. V.
" munitum. Vol. I, Series 2.
" Nevadense. Vol. I, Series 2.
* " Thelypteris. Vol. IV.
Asplenium ebeneum. Vol. II, Series 1.
Asplenium ebenoides. Vol. I, Series 2.
* " Filix-fœmina. Vol. VII.
* " montanum. Vol. II.
" parvulum. Vol. II, Series 1.
" pinnatifidum. Vol. II, Series 2.
" trichomanes. Vol. I, Series 1.
Botrychium ternatum. Vol. II, Series 2.
" Virginianum. Vol. II, Series 2.
Camptosorus rhizophyllus. Vol. I, Series 2.
Cheilanthes Californica. Vol. II, Series 2.
" vestita. Vol. I, Series 2.
Gymnogramma triangularis. Vol. I, Series 2.
Lomaria Spicant. Vol. II, Series 2.
*Lygodium palmatum. Vol. V.
*Notholæna dealbata. Vol. I.
Onoclea sensibilis. Vol. I, Series 2.
*Osmunda Claytoniana. Vol. IV.
Pellæa atropurpurea. Vol. II, Series 2.
* " gracilis. Vol. III.
" ornithopus. Vol. II, Series 2.
Polypodium Californicum. Vol. I, Series 2.
" falcatum. Vol. I, Series 2.
" incanum. Vol. I, Series 1.
" vulgare. Vol. II, Series 1.
Schizæa pusilla. Vol. II, Series 2.
*Trichomanes Petersii. Vol. III.
* " radicans. Vol. II.
Woodsia obtusa. Vol I, Series 2.
Woodwardia angustifolia. Vol. II, Series 2.
" Virginica. Vol. II, Series 2.

(Those designated by an asterisk (*) appeared in MEEHANS' MONTHLY and the others in the "Flowers and Ferns.")

In addition to the above, the following have been illustrated in the former work in the ordinary way, without the two-page text that accompanies the plates:

Ophioglossum vulgatum. Vol. VI.
Scolopendrium officinarum. Vol. VII.

Illustrations of mixed borders of ferns are desired, and if the readers of MEEHANS' MONTHLY have any that clearly show the kinds composing the bed they will be received with the thanks of the publishers.

STRAWBERRY PLANTS.—It is a mistake to suppose that some specially favored location or land condition is needed by the strawberry. It can be successfully grown anywhere that corn or potatoes will thrive. Pot grown plants are a great advantage over layer plants, from the fact that when set out in the late summer or fall they will bear an abundant crop the next season.

HABENARIA BLEPHARIGLOTTIS.

WHITE FRINGED ORCHIS.

NATURAL ORDER, ORCHIDACEÆ.

HABENARIA BLEPHARIGLOTTIS, Hook.—Leaves oblong or lanceolate,—the upper passing into pointed bracts, which are shorter than the ovaries; spike oblong, rather closely many-flowered; flowers white; petals spatulate, slightly cut or toothed at the apex; lip ovate, or lanceolate—oblong, with the irregular capillary fringe of the margins usually shorter than its disk, one-third the length of the spur. Variety *holopetala* has narrower petals with the toothing obsolete, and the lip less fringed. Gray's *Manual of the Botany of the Northern United States*. See also Wood's *Class-Book of Botany* (under *Platanthera*,)—and Chapman's *Flora of the Southern United States* (as *Platanthera ciliaris* variety *blephariglottis*).

It has been stated that what is or is not a genus, a species or a mere variety, is simply the opinion of an expert. Nature knows no such distinction, and they are referred to their respective stations by man, for the purpose of facilitating the study of nature's works. It is recognized, however, that, in development, nature advances and pauses, forming, as it were, links in a chain instead of a direct line; and the effort of the botanist, in the building up of a system, is to get the boundaries of these links as nearly as possible. It is not possible, however, to clearly define the exact line, and thus opinions must vary with the value of the facts in influencing different judgments.

The truth of this proposition is well illustrated in *Habenaria blephariglottis*. The acute botanist, Nuttall, could not distinguish it from *Orchis*. He made it *Orchis blephariglottis*, following, in this reference to *Orchis*, the older botanists. Linnæus had our species in mind before he thought to introduce the binomial system, and in one of his earlier works (1740) wrote of it as "*Orchis bulbis indivisis, nectarii labio lanceolato ciliato, cornu longissima.*" This appears to have been from specimens sent by Clayton, whose editor, Gronovius, claimed that the white and the yellow were mere varieties of each other. But Clayton seemed, himself, to have looked on them as distinct. This particular form he refers to as "*Orchis testiculata floribus niveus speciosus spicata.*" When the binomial system was introduced, Linnæus made it *Orchis habenaria*, the specific name referring to the long, rein-like spurs or nectaries. *Habenaria* was subsequently used as a generic division of *Orchis*, but our species was left by Willdenow as *Orchis blephariglottis*, —the latter name from the ciliate or "eylashed" "tongue" of the labellum. Subsequently it found itself removed to *Habenaria*,—and when *Habenaria* was again divided, it became a *Platanthera*, and to this day authors, as seen by the quotations at the head of the chapter, cannot agree as to just where its place should be.

What is true of its generic position is equally true of its specific appellation, whether it should or should not be separated from *H. ciliaris*, be regarded as a mere variety, or considered exactly the same, differing only in color, is a mooted question. Michaux contended for it as a mere variety, and has it under *ciliaris*, var. *lutea*, and var. *alba*. Beck, in his botany, remarks that it is "so near *ciliaris* as not to be distinguished except by its white flowers." Yet, as seen in the quotations, Dr. Gray not only sees a marked distinction, but enough to make a distinct sub-species, to which he has given a distinctive name. Nothing can be clearer than that genera and species are but expert opinions.

It may be noted, however, that a few years before his death, Dr. J. Gibbons Hunt, eminent for his botanical acumen, exhibited, before the Academy of Natural Sciences of Philadelphia, sets of specimens of the yellow and the white from New Jersey, and not even with microscopes could the slightest difference be seen in any respect but in color; and now the botanists, of that section of our country, do not attempt to look for any other lines of separation. When they gather the yellow form, it is placed with *H. ciliaris*, and the white as *H. blephariglottis*.

The resemblance, of the flowers of many orchids to various insects, gives the plants of the order a special interest. C. Smith, a poet,

speaks of them in the earlier part of our century:—

"The orchid race with varied beauty charm,
And mock the exploring fly or bee's aerial form."

But it is still an open question whether this mockery or mimicry comes from a mere coincidence, or really has any bearing on the question of relation between insects and flowers. In his wonderfully interesting work "on the fertilization of orchids," Mr. Darwin gives numerous facts indicating the close relationship. He says, "from the observations with respect to this and *Habenaria*, it is a safe generalization that species with a short and not very narrow nectary are fertilized by bees and flies, — while those with much elongated nectaries (as in *Habenaria*) are fertilized by butterflies or moths,—these being provided with long and thin proboscides." But observations, since Darwin's time, have brought out other curious facts. There is a tendency to dioecism in orchids as in other plants, and this tendency often commences by having apparently perfect anthers, but which have really imperfect pollen. Dr. J. Gibbons Hunt, in the paper before cited, states of *Habenaria blephariglottis*, that the pollen masses "often extracted by the visiting insects, were utterly incapable of performing the work of fertilization." He attributed it to the fact that the pollen was extracted from the flowers in this species "before it was ripe;" but in other orchids, especially in the curious exotic genus of *Cycnochis*, it is found to be barren from a tendency, wholly developed in that species, to dioecism. It is safe to say that much more remains to be discovered as to the economy of the peculiar arrangements of orchids than has yet been observed.

Some of the most beautiful orchids of the Old World love the shade of woods, as the Rev'd John Birdlake says:

" * * * every flashy vale
Each dry entangled copse, empurpled glows
With orchis blooms. * * * "

Our species, with most of its relatives, are lovers of the "flashy" places,—usually grassy or mossy swamps, in various localities from far north in Canada to Florida. It is worthy of note that the yellow form gets rarer as we advance northward, until at last only the white, our present subject, prevails.

A remarkable fact, connected with the geographical distribution of the genus, is that, while the genus itself has a remarkable range over the world, the species are comparatively local. Some four hundred species have been named by describers, and many of them are found in every one of the four quarters of the globe; but rarely are there many species in any one locality. In the northeastern portion of our country, there are but eighteen species,—and, in Japan, but three, and these are quite different from those which we have. A very few, like *H. hyperborea* and *H. dilitata*, have managed to see more of the world than some of the rest.

In many works, our species is described as having palmate roots, but this is evidently a misapprehension. Our picture shows but one fleshy tap-root, from the apex of which numerous thready but coarse fibres push somewhat horizontally. When the plant is about to flower, a very short stolon or runner, terminating in a bud, pushes out from the base of the flower-stalk. From this bud, another fleshy tap-root descends. The old original or parent tap-root dies after flowering, leaving the younger to continue the living plant for the following season. So far as the author has ascertained, this is the course with every plant, seeming to indicate that though one plant can perpetuate itself indefinitely, the increase in numbers can be brought about to any great extent by seeds only.

A singular circumstance in connection with orchid seeds is, that they are very nice in the conditions required for their germination. It is to this fact that so many species are so rare. Though a plant in any given locality may ripen seed annually, young plants may never appear in consequence of the conditions having changed since the plant's first location there. There may have been a swamp in the long time ago,—but during the ages rains clear an avenue for the water, and the swamp becomes dry land. The plant does not mind,—but the seeds are not satisfied. In the swamps where the *Habenaria* is usually found, there are young ones in abundance. Plants increase in numbers continually. The nice conditions required by the seeds continue from age to age. It is a beautiful lesson in plant life.

EXPLANATION OF THE PLATE.—1. Complete plant from New Jersey. 2. Tap-root of flowering specimen. 3. Young offset forming plant for subsequent year. 4. Outline sketch, showing more clearly the "blephariglottis" or eye-lashed tongue.

WILD FLOWERS AND NATURE.

BEFORE THE GUST.

It was still, the winds were silent, and the forest
boughs
Stood hushed without a motion, and their leaves
Sent out no more that harmony of sounds
By which the unseen ministers of air
Utter their low-tuned voices.

—PERCIVAL.

KALMIA LATIFOLIA, THE WOOD LAUREL.—"If He so clothe the lilies of the field which to day is, and to-morrow are cast into the oven, how much more will He clothe you."

The true lover of nature is never a doubter of this divine power. Every day and almost every hour brings him to a new realization of the fact. The tiniest flower, the most somber plumaged bird, each has its place, each has its mission to fulfill, and the requirements necessary for its fulfillment.

No plant more than our common Wood Laurel shows that its construction is not merely a case of "happened so," but a plan of divine ordering. Cross-fertilization is absolutely necessary for seed formation in this plant, and the way in which it is secured is truly wonderful.

Each little bud has ten notches into which the long filaments of the stamens are fastened. These filaments spread out from a pistil which stands up in the center. It has been likened to the handle of an umbrella of which the filaments represent the ribs. The honey is stored at the base of the pistil, consequently when a bee comes in search of its food it brushes over these filaments and they are dislodged from their notches, springing back with such violence as to cover the bee with the pollen. On going to the next flower the bee is almost certain to rub some of the pollen against the pistil and in this way cross-fertilization is secured. The experiment of covering some of the flowers with gauze was tried, thus excluding the insects, and no seeds were set.

In many parts of our country, the hillsides during June are a dream of beauty, being almost covered with this beautiful shrub. In England, where it is a carefully cultivated plant, our stories of its profusion here can scarcely be comprehended.

On one estate near London (Barewood Gardens), are to be found some especially fine specimens. The papers advertise the approach of the flowering season, and people come from miles to see this plant in bloom.

Laurel has various local names: Calico bush, probably from the markings of the flowers; also Spoon-wood, the Indians using the wood for cooking utensils. Its botanical name, *Kalmia*, was given it by Linnæus after one of his pupils, Peter Kalm, who first introduced this plant to the notice of the great botanist.

It frequently grows to a height of fifteen feet. The leaves are evergreen. The roots assume fantastic shapes and are much used in rustic work.

AMANDA LANGDON.

Canaan, Conn.

INSECTS AND COLORED FLOWERS.—No fair-minded man would accuse a professional expert of wilfully mis-stating facts, yet the evidence that they unconsciously testify in accord with their sentiments, is manifold. It is so with the earnest devotee of science. He readily observes that which favors his hypotheses, and is oblivious to others equally plain. In America, the unprejudiced observer notes that members of the bee family are intelligent creatures that can profit by experience. They soon learn to distinguish a withered flower from one that is fresh and fair. That color in a flower is one of the guides to this experience, is undoubted,—but that they could or would not detect nectar unless flowers were colored, American observers would regard as a proposition hugely extravagant. A Professor Plateau, in the Old World, has recently shown that American observation is correct. Sir John Lubbock takes issue with the Professor. The Sea Holly, *Eryngium maritimum*, is a favorite with bees. It has a colored involucre. Sir John cut off a few of these involucres. The bees then failed to at-

tend to these heads. Of course they failed. The bees had learned that when the involucres had withered and gone, there was nothing worth their search. But on this simple experience, Sir John hastens to inform the London Linnæan Society, that all the large array of facts collected by Plateau must be worthless!

If Sir John had cut off all the bracts instead of a few here and there, the bees would have soon found out that the enthusiastic baronet had been fooling them. If he will plant a few *Echinops* along side of the *Eryngium*, which have heads remarkably alike, but with no bracts to the former as "color guides," he will find no difference in the visits of these creatures, unless, indeed, the English bee is a dullard in comparison with her American sister.

THE NEGLECTED SMILACINA STELLATA.—*Smilacina stellata* is one of the handsomest little plants that grow in our woods. The stem and leaves are glabrous. It is ordinarily about a foot high, terminated by a little raceme of very delicate, pearly white, stellate flowers. It prefers moist, partially shady places; just such places as the Lily-of-the-Valley flourishes in. It is the easiest plant in the world to cultivate, and is one of the few wild flowers that do not deteriorate by cultivation. Plant out a stalk of it, let it alone, and in two or three years you will have a thick bed from one to two yards square. About the first of May, it flowers, when but few things make as pleasing an appearance. J. T. STEWART.

HABITS OF TOADS.—You mention, in your note, on page 67, the singular fact that "toads walk." We have a Cake which walks in this country as well as a walking Hat. Did you ever hear of toads fishing? Around the Relay House, in Howard County, Maryland, some of the people of the City of Baltimore spend their summers. It is a great place for toads. It is also a great place for gravel, which is naturally in the soil. This makes the road-beds firm and hard, and are pleasant to travel over. These roads are the places on which the very fashionable toads love to congregate and disport themselves. At dusk of a pleasant evening, the toads troop along these gravelled avenues in droves. The occupants of the dwellings provide themselves with long cane rods, to their small ends a short line is tied on and to the end of the line is fastened a small piece of red flannel. As the toads hop along the dusky paths, the red flannel is dangled before their eyes. What the toads consider the red flannel to be, I do not know. Anyhow, they try to get it into their mouths. When they succeed, which they often do, they are hauled up and they hang on for dear life, and are swung around considerably, until all of their teeth are pulled out, when they drop down in a miserable heap on the ground, where they sit awhile thinking over their experiences. F. K. STEELE.

Festus, Jefferson County, Mo.

WATER HYACINTH.—Dr. Thomas R. Baker gives an interesting account of the obstruction to the navigation of the St. John's River, Florida, by the *Eichornia crassipes*, in *Popular Science News*. It is a South American plant, and has found its way to the river as an escape from cultivation. It is figured in our magazine for January, 1892.

It became a serious obstruction to navigation in 1896—already the steamer is delayed an hour, in its regular trips, through having to plough its way through the mass of vegetation; while danger from striking hidden logs is very great.

How to destroy them, is a problem. If there were some method of protecting water birds from the sportsman, the problem could be easily solved. It might pay the transportation companies to take special methods to protect the birds, just as people in some countries have to employ shepherds to care for sheep, or cow-boys to look after cattle on the plains. The birds, in the end, would help to pay the expenses.

MAJANTHEMUM CONVALLARIA. — Driving through a pretty piece of hillside woodland in May, the writer could not refrain from a five-minute stroll to catch a glimpse of some of the beauties known to be there.

The accustomed eye has no difficulty in locating something of interest on every side. Besides several species of ferns, in a small area were found *Polygonatum multiflorum*, Solomon's Seal, nearly related to the subject of this sketch; *Azalea nudiflora*, Wood Honeysuckle; *Claytonia Virginica*, Spring Beauty; *Viola pedata*, Bird's Foot Violet; *Cypripedium*

acaule, Lady's Slipper, the species readily detected by the leafless flower-stalk. *Majanthemum Convallaria* was perhaps most interesting. The leaves lie close to the ground, are of a shining green, and look as though scattered there loosely rather than attached to stems. From these leaves, arise flower-stems producing a very small raceme of fragrant, white flowers. They are easily transplanted and are excellent for ground-covering in somewhat shady places. Large patches are not infrequent and are pleasant sights not soon forgotten. It is commonly known as Two-leaved Solomon's Seal. It may be well to note that in most American botanies the name employed is *Smilacina bifolia*.

MONSTROUS ANEMONE.—A Chicago correspondent sends a specimen of the garden *Anemone*, in which the involucral bracts are largely increased, and the petals mostly appear as leaves. It is an evidence that imbecility prevails in the vegetable as well as in the animal world. The teachers of modern sciences in colleges and universities represent these abnormal conditions as "reversions to some ancestral types." If the ancestors of our cauliflower, cabbage, brussells sprouts, kohl-rabi, turnip, etc., were once running all over the wide, wide, world, and are now "reversions" merely, the old folks were better off than we are.

THE SWAMP CABBAGE AS AN ORNAMENTAL PLANT.—The recent note about *Symplocarpus* calls to mind the fact that the sidewalk merchants had the roots for sale, this spring. The flowers were hardly open.

E. S. MILLER.

Floral Park, New York.

MIMICRY IN NATURE.—The sensational literature of botany gives a special interest to that study that is very agreeable to some minds. But it is well to remember that these speculations are not the real science itself. A supposed mimicry in plants and animals, for instance, has been taken to show these peculiar forms were taken to fool the observers. Some insects, for instance, may have wings like leaves. In these cases it is represented that the insect has gradually been "adapted" to this condition for protective purposes. But when this principle is enlarged it is found not to work. Here is an instance, presented by the *Popular Science News*. It represents the pupa of a West African insect, described as *Spalgis signata*. The "*News*" credits *Psyche* with the account, which reads:

"The collector, Rev. A. C. Good, Ph. D., remarks, 'here is mimicry, but to what possible purpose? Or has Dame Nature for once laid aside her usually practical character and decided to amuse herself?'"

The fact is that in the numerous gradations in variation, evident in all things, some lines must cross each other so as to have similar appearances. In some of the pupa cases of

MIMICRY IN NATURE.

our common insects we may very nearly see a resemblance to the heads of animals. Some very interesting resemblances can be suggested by a study of that of *Danais Archippus*,—but no one really believes these resemblances were purposely assumed with the idea of deceiving the looker-on.

Anyone can see that variety is essential in the order of nature. One thing could not be distinguished from another without it.

There is nothing fanciful in believing that the law of variation is for the sake of variation in a great measure, though it undoubtedly may have special uses to serve besides. It is not mimicry as we are taught to understand what mimicry means.

GENERAL GARDENING.

THE GARDEN INSPIRATION.

I have a garden filled with sound
Of thrushes; paths that circle round;
And one straight walk more sweetly set
With lavender and mignonette,
Sweet herbs of grace, whose scent lives on
Like virtue, after life is gone;
My Sanctuary, for so I call
That long straight path beneath the wall.

There do I muse—how Nature's self
Moves upward; how, from shelf to shelf
Ennobled through perpetual strife
She issues in a grander life.
And as I think how one small bud
Engrafted tames the wildest wood,
Sweet fruitage for man's use to bear,
And of its sweetness leave an heir;
Seems it—ah, may my faith be true—
Grace has its power in Nature, too.
'Tis grace that lurks in kindly soil;
'Tis grace attends the tiller's toil;
Grace works in every flower that blows;
And in each briar there lives a rose.

—SPECTATOR.

RAISING CARNATIONS.—English horticultural papers contend that carnation plants raised from layers are better for winter flowering than by the method, universally in practice in America, of raising them from cuttings. It is said that layers put down during the summer will make plants strong enough to flower the following winter; and this is given as the chief reason for the practice. They also contend that such plants are healthier than when raised from cuttings. There may be a something in the last named complaint, as it is well known that plants raised from cuttings, under glass, are very liable to carry with them the seeds of root-fungus, which is very destructive. But so far as the plants themselves are concerned, American growers will show just as large, and even larger and better, plants from the cuttings than European growers will from layers. The plants are raised very early in the spring, and set out in the open ground just as soon as the spring season advances. With good culture and management, these plants will be much larger and stronger in every way than it would be at all possible to raise from layers around a mother plant.

VIOLET, THE CALIFORNIA.—The California Violet is a good one for the amateur to grow. If properly handled, it will bloom eight months in the year. The best way to grow them is to start them from cuttings about the first week in March. I take good strong cuttings, and put them in shallow boxes, using half sand and half loam. In about a month, these cuttings will be well rooted, when I put them in a cold frame and keep them cool until it is warm enough to plant them in the open ground. I plant about ten inches apart in the row, making the rows eighteen inches apart. I am very careful about keeping weeds out and also the dead leaves. Once during the summer I go over them and cut all the long runners off. This is done about the first of July. I plant them in the frame about the first week in September. When planting, I never cut any runners off, which would injure the crop of violets for the winter.

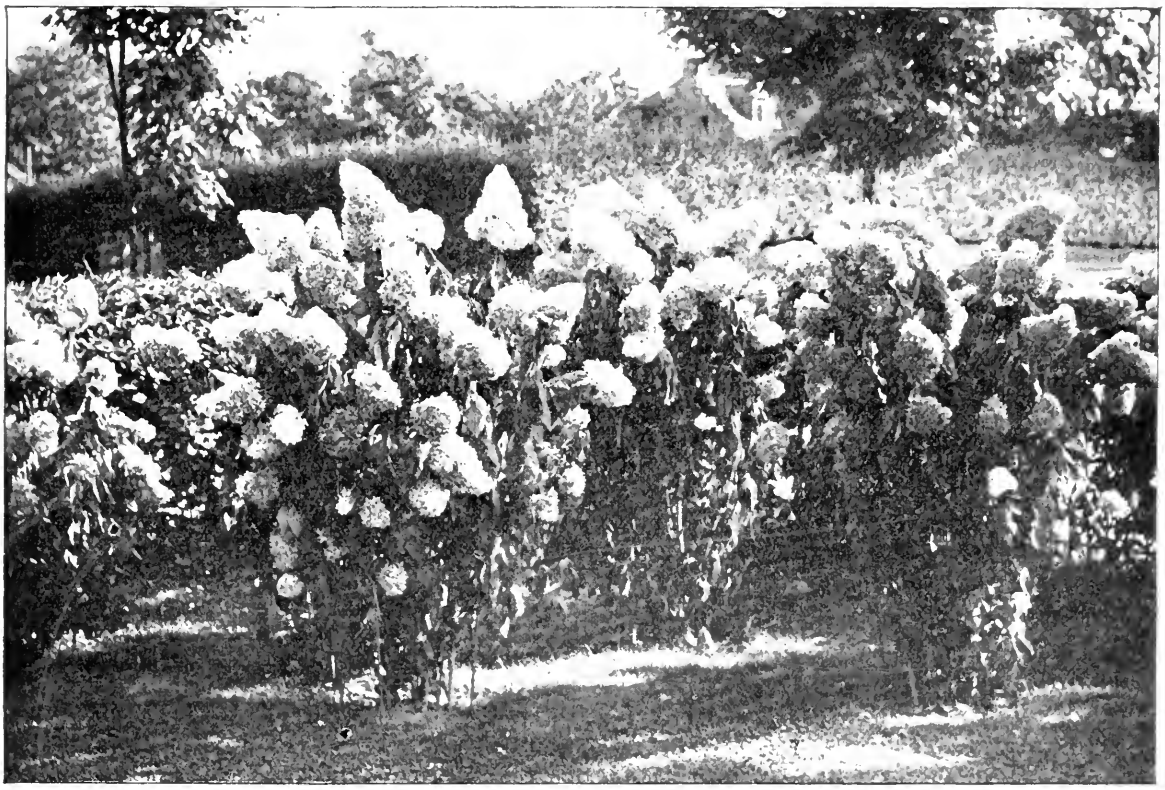
By this time the plants have very large roots. I lift them with a ball sometimes as large round as a waterpail, and set them right in the frames.

It is better to have the frames a little deeper for the single violets then for the double, and they do better in a frame about twenty inches from the glass than they do in shallow frames. I have started to pick a week after planting, and continued until May first.

Yonkers, N. Y. HOWARD NICHOLS.

CARE OF HARDY FERNS.—During the hot and dry summer months, the fernery should be watered frequently, particularly that containing delicate-leaved plants like *Osmunda regalis* and *Onoclea sensibilis*. These require plenty of moisture to be at their best, and there should be no excuse for not having small beds look well until cold weather. At least keep the soil cool around the roots by a light mulch of ripened hay. All evergreen kinds can well stand a certain amount of dryness, and for this reason, as well as for the winter effect, they should always be included in plantings.

HYDRANGEA PANICULATA GRANDIFLORA.—Few kinds of plants have given more pleasure to flower-lovers than *Hydrangea paniculata grandiflora*. It is easy to manage, flowers when young, is remarkably showy with age, and holds on to its beauty for a long time. The flowers are slow in withering, and hence the plant is a favorite with those who grow flowers for decorative uses. The plants in the illustration are but two years planted, though the individuals themselves are about four years old. The photo was taken in the garden of Mr. John G. Bullock, near Philadelphia.



HYDRANGEA PANICULATA GRANDIFLORA.

The original species, *Hydrangea paniculata*, is a native of Japan, and received its name from Von Siebold, in 1829. The showy white flowers are barren. The female flowers are small and insignificant. It is the greater abundance of the barren flowers in the variety *grandiflora* that gives it so much prominence in ornamental gardening. Severe pruning in the spring induces vigorous growth and large heads of flowers.

CLEAN POTS.—The inside cleansing of pots previous to use is work done only by those who have found by experience that such little details pay in the long run. The advantages are not always visible, but a little reasoning brings confidence that good results are only accomplished as a rule by thorough work. Water always takes the easiest course, therefore, hard soil clinging to the sides of pots will always be passed by water and will always remain more or less hard. That is so much less soil for the young roots, for they will not penetrate the hard soil. Then there is another important consideration : it is necessary that the sides be perfectly smooth so the ball may be removed intact when re-potting. Old soil, clinging to the pots, will surely disturb the ball when it is removed, and young roots will be damaged. Pots that have been cleaned will release the ball perfectly, the roots having gone right to the sides of the pot. After cleansing the pots, let them dry before putting in the soil, or it will cake and defeat the objects.

PRUNING NEGLECTED HEDGES.—P. B. asks: "What is the best time of the year to cut back an arbor-vitæ hedge? one that has been neglected, and is considerably over-grown; fine, healthy plants, possibly thirty or forty years old, about eight or ten feet high, and almost as thick.

Will a beech hedge stand cutting back severely? its dimensions are almost like the above."

The pruning of such hedges should take place early, while the plants are making growth. But the lower branches, which are likely to be weak, must not be touched; they will receive the benefit of additional sustenance, which would otherwise have gone into the upper branches, and the hedge will then become broad and full at the base, as all hedges should be. Should strong growth be made during the summer, it may be necessary to trim it all slightly, after the season's growth is about completed.

FIRE BLIGHT.—In reference to some recent suggestions in the magazine, regarding the disease known as Fire Blight in the pear, a correspondent says: "Are you not mistaken as to the cause? I have condensed the following from one of the bulletins of the National Department of Agriculture, which is regarded as of the highest authority on all matters pertaining to these subjects:

'Apple and Pear Blight is commonest upon the pear, where it is known as Fire Blight, but also attacks apples, quinces and allied fruits. Its bacterial origin was first demonstrated at what is now the Illinois Experiment Station. The methods of infection and prevention have been well worked out. The parts affected are the flower clusters, young fruit, and the more succulent woody tissues and foliage. The disease runs down the living bark to the larger limbs and trunk. While it attacks the leaves to some extent, the discoloration and wilting of the foliage is mostly due to the destruction of the twigs. The affected portions are quite conspicuous, and all portions below the point reached by the spread of the bacteria will be healthy. While the disease is progressing, the discolored portions of the bark blend gradually with the normal-bark, but when the disease has run its course the line is sharply drawn. From a long series of experiments conducted by the Department of Agriculture, it was learned that the chief means of spreading the contagion was through the visits of bees, the first point of infection seeming to be at the nectaries. The disease is accompanied by a flow of gum, and it is thought probable that the first flowers are infected by bees, flies, etc., that have visited the gummy deposits.'"

No one desires to have a controversy with the intelligent people connected with the Department of Agriculture. But there are intelligent observers elsewhere as well as in the Department. Their conclusion is that the original location of the disease is at some point below, and that the zymotic influence progresses upwardly from that point, and in this view MEEHANS' MONTHLY concurs. It is as destructive on young trees as trees with flowers.

DESTROYING THE BLISTER BEETLE.—I note remarks in a recent issue of the MONTHLY about the Blister Beetle. They are friends of mine, and visit me each season. They are very fond of the *Clematis paniculata*, *C. graveolens* and *C. Virginiana*, preferring them on my ground to the asters. The first appeared in my trial grounds, where a *C. paniculata* was growing; and, at each renewed annual visit, they seemed to turn up at that one spot. Having my finest specimens of clematis around my porch, some 200 feet away, I was afraid they would hear of them and try their edible qualities, so I concluded to let the one on my trial grounds remain as a bait. I have tried various methods of exterminating them—Paris Green, Persian powder, etc.—but without avail. Turning the hose on them, will drive them over to your neighbor's garden, but he soon learns the trick, and getting out his hose, sends not only your quota back, but his crop also. The easiest way to get rid of them is to take a wide mouthed vessel, or a small pan, fill it with an inch or so of water, then pour in a little kerosene oil. The oil floats on the top. Hold your can under the plant and shake them into it. The same oil may be used for a week or more. They are fond of the Kentucky Coffee tree.

W. C. EGAN.

In Mr. Egan's note on "Root storing mice," page 83, "heavy irons enabling them to get up 3 feet," should have read "heavy snows."

ASPARAGUS, FERNS, ETC., FOR DECORATIVE WORK.—Green foliage, for working in bouquets, and for general decorative purposes, is essential on every private place of great pretension. Maiden-hair Fern for the *boutonniere* and bouquet, smilax for graceful, hanging decorations, and the more-recently used asparagus for table and general use are chief representatives of this class of material. Within the past couple of years, *Asparagus Sprengeri* was introduced, and has been found valuable as a graceful plant and for its long keeping qualities when cut. But it is not expected to take the place of *A. plumosus*, the foliage of which is somewhat fern-like and useful, where the other is not. This latter is a very strong growing climber, requiring, frequently, houses of unusual height in which to grow it to its full extent. There is also a dwarf variety, but which nevertheless attains a remarkable height, and has even finer foliage.

Ferns are perhaps the most troublesome to grow satisfactorily, yet they are so desirable that trouble is scarcely a consideration. Then if their requirements as to treatment are carefully learned and provided for the trouble is reduced to a minimum. It is lack of attention that makes additional work here. Good drainage, subdued light and a warm but moist atmosphere are essential conditions. Perfect plants should not have old and damaged fronds mixed largely with young ones, therefore, it is best to harden them off by bedding them out in a convenient, shaded place, where they may be gradually partly dried off. This should be done in the latter part of summer. When ready to be taken in, their tops may be cut and the crowns divided, if desirable, into pieces not too small. The Maiden-hair varieties and the graceful Farleyense are best known for cutting purposes, though there are a number of others quite desirable. Plants may be raised from spores, and will prove interesting, though strong young plants are cheaply purchased from large growers.

Smilax is raised from seed sown in mid-winter or later, the plants being advanced in pots until ready for planting in permanent beds, from which three to five crops are usually taken. A rather insignificant flower is produced, which has a decidedly agreeable odor.

Asparagus plumosus is raised from cuttings or increased by root division, the plants being chiefly valuable during the second and third years. During the summer the plants should be dried off.

Asparagus Sprengeri is not distinctly a climber, though it is being worked in this direction by a prominent florist, who expects early success. It is either tied up or permitted to fall, which it does gracefully. This may be raised from seed. It also makes a beautiful pot or tub plant when stationed on a pedestal or other elevation and allowed to droop around it.

POTTING ROOTED CUTTINGS.—It is not advisable to leave cuttings in sand after they have become sufficiently rooted to permit of their removal, as fine sand, in which they are rooted, may not contain a sufficient mixture of necessary food, and richer soil is better, particularly while the cutting is adding root and growth. Then, too, transplanting is effected with less danger of a check in growth, as the smaller and few roots will be less likely disturbed than if they are numerous and long. Young roots are covered with tiny hair-like fibres which are the chief parts that take up food. These are likely to be injured in lifting the plants from the cutting bed, and, therefore, the plants should be shaded and the soil kept moist for a few days until the roots can become established and support the leaves and young growth, which, if left to the mercy of the sun and dry air, might quickly wilt from loss of moisture in rapid evaporation and transpiration.

The first potting soil should be light and the pots small. The roots should be carefully spread out in the pot, and the earth placed in close contact with them, but not packed, for the free passage of air and water is essential. That these elements may reach the roots easily, the roots should not be placed too deeply in the pot, though this is hardly probable where small pots are used.

The length of time required for a cutting to root depends upon the kind in question. Fleshy stems, containing a good store of nourishment, will at times root within four or five days; the average of soft-wood plants would require about two weeks. To watch them, one or two can usually be carefully removed and replaced without injuring them. The roots should be from one to two inches long.

THE OAK AS AN ORNAMENTAL TREE.—The great popularity of the oak for ornamental purposes, during the past three years, is one of the marvels in American gardening. Fifty years ago, the one who should recommend the oak was recorded as a dreamer. It is said they grow too slowly, and it is contended that it is impossible to transplant an oak successfully. But it is now found that they transplant as readily as any other tree and, indeed, are much more successful than some trees that were formerly so popular, — and as for growing slowly, some of them progress remarkably in this respect. Under favorable circumstances, a large number of species of oak will be 30 or 40 feet in height in twenty-five years. There are very few trees, aside from poplars and Soft Maples, that can do better than this. They have many advantages which some trees, formerly more popular, do not possess. There is a variety in the growth of the trees and the forms of the foliage. The splendid color of most of them in the fall of the year gives them a special charm. Some have bright golden leaves in the autumn time, and various species of the Chestnut Oak division are of this character. Of the bright-colored-leaved class, we have the White, Red, Scarlet and Pin Oak. In many other valuable points, the oak has come to be recognized as desirable. So great, indeed, has become the demand for this class of ornamental trees, that some of the leading nurserymen tell us the demand has exhausted the supply. It goes to show that the people of to-day can be educated to good things, when the good things recommended are really good.

EVERGREENS FOR KANSAS.—The vital differences in climate, atmospheric moisture and exposure between one section of a country and others make it important for the planter to acquaint himself with the results of trials in his own vicinity. Many excellent, desirable plants that would prove invaluable for certain effects are debarred from use through mere ignorance of their capabilities to stand the changes in environment ; and those, who are interested in establishing plants practically unknown to certain regions, confer great benefit, that becomes mutual, to the horticultural public, in making known their experiences.

A correspondent from Kansas takes particular note of the behavior of evergreens transplanted to that State, and reports enthusiastically of his success with Rollinson's Golden Arbor-vitæ, *Biota elegantissima*, which stood several hot, dry summers and in loose soil. He says that "last summer we had 44 days during which, at noon, the thermometer was not lower than 106° and often 110°. Scotch, Austrian and Ponderosa pines, and all the Colorado evergreens do well here. Retinisporas and the Silver-tipped Arbor-vitæ do not seem fitted for this country, though growing finely up to July. American Arbor-vitæ, Norway Spruce and White Pine have been tried several times, but wont stand the heat and drought."

FORESTRY SPECULATIONS. — The *Florida Farmer* says,—"The theory that deforestation causes failure of rainfall, occurrence of frosts, depletion of the soil and, finally, decadence of the human race itself, has become so generally diffused that probably nothing that can be said will ever eradicate it." This expresses the exact truth and has always been the stand taken by the writer of this paragraph. The speculations have done great injury to true forestry interests. Our native forests will eventually disappear. Trees will not live forever. Rotten trees and rotten underbrush invite forest fires, and while these conditions exist forest fires will prevail. When the native forests disappear, as disappear they certainly will, we shall have to do as other nations do, plant new forests. New forests will only be planted when it is to the individual interest to do so. Up to the present time there has been little necessity for the investment of capital in this direction. The opening of railroad lines has brought available forests within the reach of the lumber dealer. Until these are exhausted, new forests will not be planted to any great extent, although it has already been thought advisable, and, if some intelligent effort was given in this direction, the true interests of forestry would be vastly served.

CRYPTOMERIA JAPONICA.—Many beautiful and rare trees get a bad name, because of a few of the earlier trials resulting discouragingly. *Cryptomeria Japonica* is one of these. There is a general impression that it will not do in America. On the estate of "Upsal," in Germantown, are some fine specimens, thirty years old, perfect in all respects, and lovely.

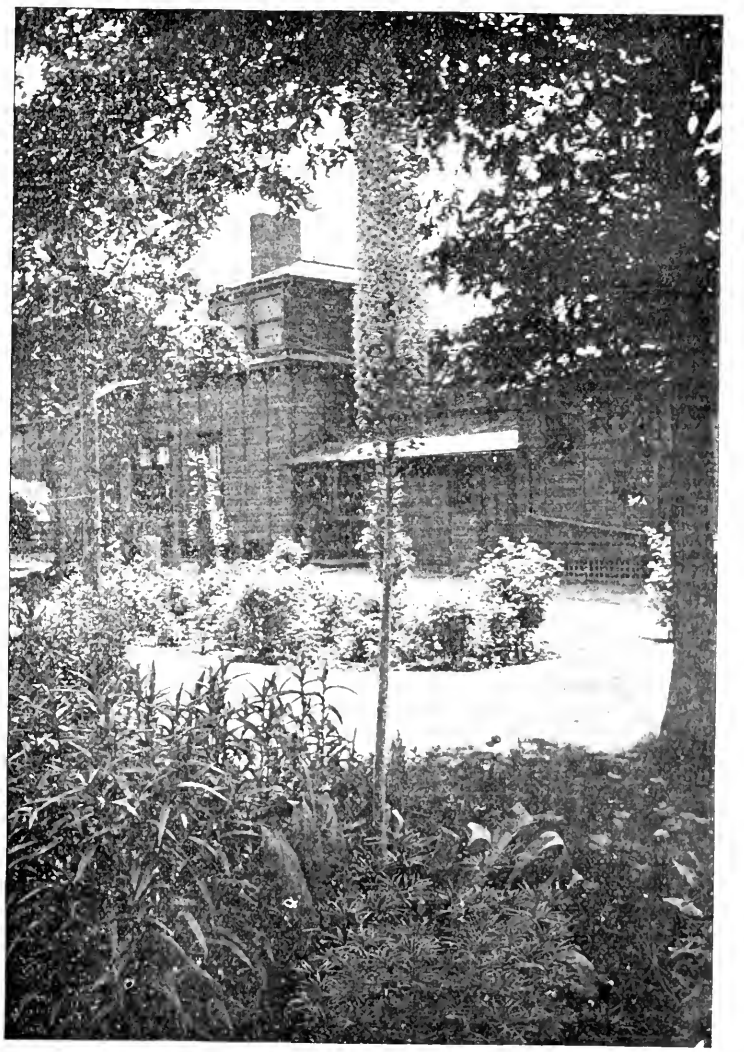
NEW OR RARE PLANTS.

EREMURUS ROBUSTUS,—THE HALF-CENTURY PLANT.—Mr. W. C. Egan has the following pleasant reflection on the flowering of that remarkable plant, *Eremurus robustus*. It is a native of Eastern Asia, and a relative of the Century Plant, whose centurial habit of blooming it is evidently competing with.

"When I am in trouble, I come to you. I have just bloomed an *Eremurus robustus*, and have a flower stalk left that is eight feet four inches high. I want your advice. Would you retain it, and use it for a fishing rod, or try to sell it for a telegraph pole?

I have observed the development of this plant with interest, and it has taught me this, viz., that while virtue has its own reward, so also has patience, if one is patiently patient. That if one desires his son to enjoy the bloom of this *Eremurus*, the seed should be started at his birth, and, if each live and thrive, the moustache of one and the flower stalk of the other will appear simultaneously; and then the question arises. Which will he be the most proud of? All this is preliminary. What I started to write you is this. It is the first bloom stalk of the plant. It is maturing thirteen seed pods out of hundreds of individual flowers. These are all about midway up the blooming part of the stalk, which part was four feet four inches long, from which I imagine that the stalk possessed its greatest vigor at the time these flowers were maturing, that it was gaining strength to this point and losing afterwards. This plant is shaded by an oak at the south from,—say 10 A M. to 3.30 P. M.—The sun's rays from then until evening are the strongest. As a consequence, all seed pods are on the west and south-west sides of the stalk, thus showing the influence of Old Sol. Query: Could he influence them enough so that the resultant—if the seed were sown—would be a hybrid between a sun-flower and an eremurus?"

Vigor in plants has various interpretations. Plants never flower till vegetative vigor is exhausted. A transplanted tree, or one slightly injured so that vegetative growth is checked, bears fruit earlier than one still growing vigorously. The weakening conditions, preparatory to the incoming of what we might term the reproductive force, had not arrived until



EREMURUS ROBUSTUS.—8 feet 4 inches high

the middle of the spike had been reached. Beyond this point, nutrition failed. The greater number on one side may be a coincidence.

Aside from all this, the flowers may be like the yucca, its close neighbor, and require insects to help pollination. It takes sharp eyes rather than distant speculations to settle questions like these to any satisfaction.

YELLOW-BERRIED HOLLIES.—In the MONTHLY for June, on page 91, I notice reference to the yellow-berried holly. Near England, a small town in Lonoke Co., this State, there are three or four trees in a group bearing each season quantities of orange-yellow berries. They are growing along side of the red-berried variety, the only difference in them being, the color of the berry. These are the only trees of the kind I have ever known of, although the holly grows in profusion through the State.

Arkansas. MISS M. MATTHEWS.

NEW HARDY EVERGREEN ROSES.—The proprietor of a prominent New Jersey establishment announces that he has successfully crossed Tea Roses and *Rosa Wichuraiana*, resulting in a hardy evergreen strain. Such a union of good points, should render the new strain very welcome to lovers of good roses.

IMPROVED AMERICAN COWSLIPS. — The American Cowslip, *Dodecatheon Meadia*, has been taken in hand for improvement by Thiébaut, a Parisian florist, and numerous beautiful varieties are announced. At a Parisian show, twenty-six named varieties were shown.

CHRYSANTHEMUM MADAM BRUANT.—This is claimed to be the largest yet produced. The flower, without pressure, is said to be seven inches across.

THE HARDY FLOWER GARDEN.

LILIUM PEREGRINUM.—Formerly, this lily was called the Lily of the Sultan Zambac. It was introduced into cultivation a long time ago, and, after being abundantly raised in gardens, it has become rare. It is considered by some as only a simple variety of the beautiful White Lily—*Lilium candidum*. It is true that it does nearly approach this species, but it is smaller in all its parts; its leaves are narrower, its stem shorter, its flowers not so large and a little drooping, and the portions of the perianth are narrower at the base. However, its flowers are white, and the plant is rustic like the White Lily.

Translated from *Lyon-Horticole*,

—By S. D. L.

SUCCESSION IN FLOWERING PLANTS.—It has long been noted in America, that a species of wild flower blooming earlier than another, may be later rather than earlier another year. The *London Journal of Horticulture* notes that this is the experience in the Old World. Hepaticas, usually blooming after the Winter Aconite and Snowdrop, will occasionally precede them.

FRUITS AND VEGETABLES.

BLANCHING CELERY.—It is not for the mere sake of blanching that celery is so treated, for, if this were the case, only self-blanching varieties would be used; but it is to improve the flavor and to make the stalks tender. Care must be taken to avoid heaping the earth so that it gets in amongst the branches. Hold the stems together with one hand, while with the other the earth is pressed against the plant, leaving out merely a few leaves at the ends. As the tops grow, the earthing-up must, of course, be repeated. Celery is subject to a blight which attacks the center of the plant. This may be encouraged by soil getting between the stalks, as it has been found that, where the plants are boarded up instead of earthed, they are less attacked.

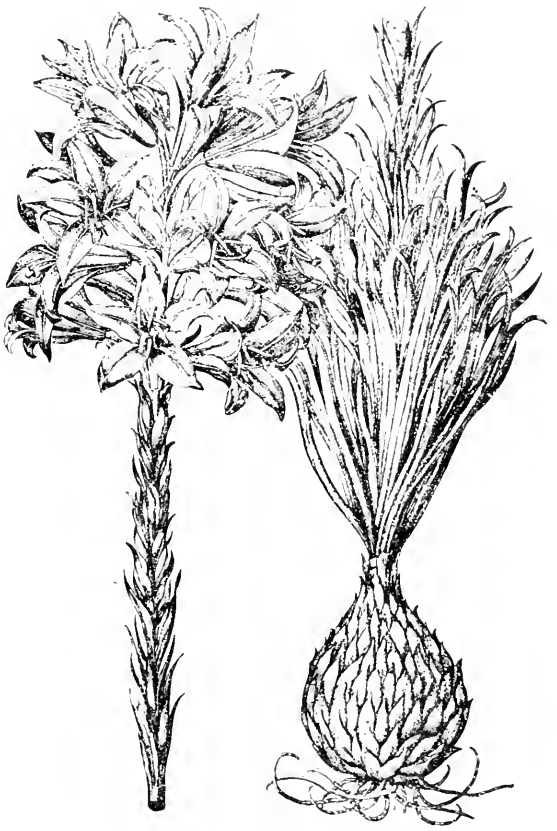
A LONG-KEEPING ONION.—I have an early Yellow Danvers onion, that I raised in 1896, which is one inch in diameter one way, and three-fourths of an inch the other. It has shown no signs of sprouting until this March. If it had no signs of sprouting, I should have tried to keep it another year.

In digging my wild potatoes one fall, I found the old seed potato perfectly sound, and so I planted it the next year and, strange to tell, I dug from this one hill 125 potatoes.

T. WHEELER.

Moscow, Vermont.

FIG CULTURE.—The fig may be grown to a much greater extent in the northern States than is usually thought possible. The branches are readily destroyed by frost, when exposed without protection. But, when wholly covered with earth, they will escape injury even in the severest weather. It seems it is the loss of moisture, rather than from any other condition, that destroys the wood, and evaporation is checked when buried under ground. To grow figs so that the branches can be thus protected, the plants have to be kept in bush form, and not permitted to grow to small trees. When the winter season approaches, and the earth covering necessary, a trench is to be dug on the side of each, and the branches are to be drawn under. A like trench must be dug on the opposite side, so that the whole root can be bent over. When the whole plant is thus turned down, the covering becomes very easy. This operation is much more easy to work than to describe in print. Without such a trenching of the earth, the branches would break off near the ground on being bent. The plants should be set in rows, so that trenches could be easily dug along the whole line. In the spring, when the earth is taken off, of course, the roots will have to be set upright again. When this is done each year successfully, no difficulty is found in bending over the plants in the described manner.



LILIUM PEREGRINUM.—SEE PAGE 124.

THE BEST PLUM STOCKS.—The question is frequently put: "What is the best plum stock for plums? " but only personal experience and preference may decide, for objections can be found to all those in common use—Marianna, Myrobolan, St. Julien and Mirabelle. Probably Myrobolan is the most extensively used in this country, followed closely by Marianna. Each has its supporter, depending somewhat on the locality. The Myrobolan stocks are raised from seed, and as they have been found to bud more easily, may be considered an advantage over the Marianna, which is propagated entirely from cuttings. But it is thought to sucker from the root more readily than the latter, though really its suckering is but little. That this is not sufficient to overcome its good qualities, is shown by its long popularity and general use. It has been about fifteen years since the introduction of Marianna as a stock, and at that time it received very general attention; but its use seems to have gradually diminished in proportion with the Myrobolan, without many reasons being given. One that had this suckering habit to an unusual extent, the Mirabelle, was quickly done away with in this country. The St. Julien is chiefly confined to European use, and is practically little known here. After all, whether any kind throws up suckers or not is often more a matter of local conditions than of constitutional habit.

ICEBERG BLACKBERRY.—Under the name of Iceberg, Mr. Luther Burbank, of California, has originated a blackberry of the light, bronzy character, known as white when applied to fruits that are not red or black. It it said to be a very desirable variety.

BIOGRAPHY AND LITERATURE.

THE EVERLASTING FLOWER.

"And thou, pale flower, henceforth shalt ever be
Of intellectual beauty type to me—
The beauty of the soul that fadeth not,
For, brighter blooms forget.

Thy fadeless and perennial flowers
Their fragrance lose not in the gloomy hours
That follow to the funeral of the year,
When all the woods are sere."

—HOWARD WORCESTER GILBERT.

GEO. S. CONOVER.—In the death of Mr. Geo. S. Conover, amateur horticulture has lost a distinguished patron. He died in Geneva, New York, in his 74th year. He was born in Brooklyn, New York, on November 7, 1824, and, in 1870, settled in Geneva, starting a nursery business. He had a genius for history, and wrote much concerning the territory round about. He wrote four large volumes of Indian history, of which he made four copies, which are preserved as rich treasures in the libraries of various historical societies. He was elected President of Geneva, in 1873, serving to 1879. His home was famous for rare plants and flowers, and the great eminence of Geneva, as a centre of horticulture, is mainly due to Mr. Conover's early encouragement and influence.

VAUGHAN'S VEGETABLE COOK-BOOK.—Ladies who go shopping tell us the valuable goods are usually in small packages. This may be so in book-making, if this small booklet of 64 pages be in evidence. How to cook garden vegetables in every shape and form, is briefly but clearly told. The following preface to the story of mushroom cooking, showing how to detect the true from the false, is a specimen of style and treatment.

"The highest authorities say an edible mushroom can easily be distinguished from a poisonous one by certain characteristics; a true mushroom grows only in pastures, never in wet, boggy places, never in woods, never about stumps of trees; they are of small size, dry, and if the flesh is broken it remains white or nearly so and has a pleasant odor. Most poisonous varieties change to yellow or dark brown and have a disagreeable odor, though there is a white variety which grows in woods or on the borders of woods, that is very poisonous. The cap of a true mushroom has a frill, the gills are free from the stem, they never grow down against it, but usually there is a small channel all around the top of the stem, the spores are brown-black, or deep purple-black and the stem is solid or slightly pithy. It is said if salt is sprinkled on the gills and they become yellow the mushroom is poisonous, if black, they are wholesome. Sweet oil is its antidote."

It is published by Vaughan's Seed Store, Chicago and New York.

THE ILLUSTRATED FLORA OF THE NORTHERN UNITED STATES AND CANADA,—By Dr. N. L. Britton and Hon. Addison Brown, New York, Charles Scribner's Sons. The third volume of the Illustrated Flora, completing this unique and valuable work, has now appeared. It takes in from "Dogbane to Thistle," or, as the botanist would say, from *Apocynaceæ* to *Compositæ*. That such a stupendous undertaking, as drawing and engraving every species of plant known in the territory covered, should have been accomplished—and so well accomplished—in such a short period, is one of the marvels of our time, and one that will always stand to the honor of this generation. The authors and publishers should be classed with the great public benefactors of the age, and are deserving of the special thanks of every lover of our native flowers.

QUAINT TITLES TO BOOKS.—We smile at the odd titles to books of the past, but modern works seem comical also. In reading of "Harris on the Pig," one might wonder how he managed to hold on; and it certainly is marvelous that there should be "Money in Hens."

ENGELMANN CAÑON, COLORADO. — Some time since, noting the slip-shod manner in which many histories are constructed, MEEHANS' MONTHLY took occasion to say that Mr. Chas. A. White was in error when he stated, in a recent sketch of Dr. Engelmann, that Engelmann Cañon was named by Dr. Parry. Dr. Parry, nor anyone, so far as known, ever knew anything of the Cañon until it was explored by Thomas Meehan, alone, in 1870, and it was named by him in honor of Dr. Engelmann. Williams Cañon was named at the same time by Mr. Williams, the leader of the party of which Mr. Meehan was a member, in honor of himself, the privilege having been accorded to those two gentlemen to give names to these hitherto unknown Cañons. General Cameron, who was at the head of the surveying party, no doubt deposited his maps in the Survey Bureaus of Colorado, and this statement could no doubt be ascertained from the Department in Colorado, by Mr. White, if he wanted to. Most of the 16 members who comprised that exploring party have passed away, but Messrs. Wm. Canby and Josiah Hoopes are still living, and know that the facts are correct.

This Mr. White did not write to MEEHANS' MONTHLY for any specific information on the subject, but has published a statement in the London *Gardeners' Chronicle*, reiterating his former error, and saying that Dr. Parry, himself, told him he named it; and he adds that no one who knew Dr. Parry will question his truthfulness.

He also quizzes the "honor claimed by Mr. Meehan" for "an event that occurred over a quarter of a century ago." It may be a surprise to this Mr. White to know that honors to Mr. Meehan commenced over half a century ago, beginning with his unsought election to membership in the Royal Wernerian Society. It may be added that Dr. Parry spent several days with Mr. Meehan as a guest, on the latter's return from Colorado, and knew of his naming the Cañon for their mutual friend; and that Dr. Engelmann knew from Mr. Meehan that the Cañon had been so named, to which he replied pleasantly. Some years after he wrote an account to Mr. Meehan of his visit to the Cañon, expressing pleasure that he found the name given by Mr. Meehan was still in general use. Surely, there need be no occasion for questioning the "truthfulness of Dr. Parry" in a case like this. The reader can put his own construction on Mr. White's statement. We repeat, it is another illustration of the so-called "truths of history."

Many pleasant recollections are associated with that exploration. Mr. Meehan found a chenopodiaceous plant, which he supposed new, and wanted it named for his friend, Josiah Hoopes, as he had named the formerly "Unknown Cañon" for Dr. Engelmann. Parry decided it to be *Obione Suckleyana*. After leaving Mr. Meehan's house, Dr. Parry went to spend a short time at Cambridge. In the course of time came the following note from Dr. Gray: "Parry tells me you found *Obione Suckleyana* in Colorado. I don't believe it, but I might if I saw a specimen." This delicate hint for an addition to his herbarium, having been taken, the following card was received: "Yes! it is *Obione Suckleyana*! You must have sharp eyes to have caught this, when so many before you missed it!"

It was not so much sharp eyes as sharp hands to hold on to cedar roots across chasms some two hundred feet deep, that led to the successful exploration of the "Unknown Cañon."

VEGETATION AND SCENERY IN THE METROPOLITAN RESERVATION OF BOSTON. BY CHARLES ELIOT.—This is a booklet, chiefly composed of beautiful views, accompanied by a treatise on the methods of controlling and changing the vegetation in the interest of the scenery. It deserves wide reading by all of those interested in the transformation of wild lands into public parks and civic grounds. The report is presented by Messrs. Olmsted, Olmsted & Eliot, of Boston, and appears to be intended for gratuitous circulation.

THE NEW YORK *Independent*.—This able paper, which has been always more of a magazine than a newspaper,—and which covers a very wide range of intellectual activity,—is to appear in magazine form as well as character hereafter.

FRAUDS OF NURSERYMEN.—The world must certainly be getting better, if history be truthful. Parkinson, who wrote the *Paradisus terrestris* in 1656, says, when writing of cherries:

"The Arch-Dukes Cherrie is one of the fairest and best cherries wee have, being of a very red color when ripe, and a little long more than round, and somewhat pointed at the end, of the best rellish of any Cherrie whatsoever, and of a firme substance; scarce one of twentie of our Nurserie men doe sell the right, but give one for another; for it is an inherent qualite almost heriditarie with most of them, to sell any man an ordinary fruit for whatsoever rare fruit he shall aske for: so little are they to be trusted." In these days, the chances are 19 to 20 that the buyer would get the kind asked for, which is something to say of modern civilization. Parkinson was a druggist. It might be well to know whether dealers in pharmacy were as bad as the "Nurserie men" two hundred and fifty years ago.

GENERAL NOTES.

BEAUTIFUL PARK SCENERY.—Some of the large parks surrounding large cities in America, boast of different spots for which each of them claim some special point of beauty of which they are justly proud,—for instance, in the California Golden Gate Park, of San Francisco, they have a water-fall surrounded by rock scenery which will be hard to match in any part of the world. Those who visit San Francisco for mere pleasure-seeking, should not fail to visit this grand piece of natural beauty.

CITY PARKS AND PLAY GROUNDS.—The meeting of the Park and Out-door Art Association of America, held at the end of June, in Minneapolis, was a greater success than the most sanguine anticipated, there being distinguished representatives from most of the Eastern and Western States. The essays and addresses were of an intelligent and practical character, that gave vigor to the new-born body.

In the absence of President Castleman, of Louisville, who has gone to the war, Vice-President Holden, of Detroit, presided. Professor Folwell, of Minneapolis; Ed. J. Parker, of Quincy, Illinois; P. H. A. Balsey, of Detroit; C. M. Loring, of Minneapolis; Geo. W. Hazard, of St. Paul; Mr. Shuey, of Dayton, Ohio; Mr. Blake, of Mankato; O. C. Simonds, of Chicago; Lewis Johnson, of New Orleans; Mrs. Robert Pratt and Mrs. Henry Brown, of Minneapolis; Mr. M. P. Hurlbut, of Detroit; R. H. Warder, Cincinnati; Mrs. Fannie Copley Seavey, Brighton, Illinois; Charles N. Lowrie, of New York; J. H. Patterson, of Dayton, Ohio; Warren H. Manning, Boston; Mayor Pratt, of Minneapolis; were among the leading speakers. There was considerable rivalry among some cities for the honor of the next year's meeting, but Detroit carried off the prize.

The influence on public opinion for city open spaces and public parks exercised by this meeting was evidently deep and lasting,—and it promises to have a highly popular and useful career.

CALIFORNIA POPPY.—The California Poppy, or *Eschscholtzia Californica*, enjoys a special reputation along the Pacific Coast of North America as a soporific and analgesic. Some varieties appear to be more active than others. It is supposed to contain a small amount of morphine, but Professor Shoemaker states (*Month. Mag. Pharm.*) that other principles not yet completely isolated contribute towards producing its effects, and among them the active principle called sanguinarine. It has been found to be an efficient and harmless soporific agent, especially for children. It relieves pain and induces sleep, relieves tremor and agrees well with the digestive organs. The California Poppy is used in the form of a fluid extract or as a syrup, half a fluidram to five fluidrams at a dose. It is said to be a good addition to cough mixtures where the use of opium is not considered advisable. The cumulative effects in human subjects resemble those produced by codein. Though its narcotic effects are not very decided, they continue for a considerable period after the medicine is discontinued.—*Western Druggist.*

LARGE PEAR TREES.—In my father's garden in the dear old Fatherland, there was a pear tree not less then four feet in diameter, and with an immense spread of branches; but it was not very high—perhaps forty feet or so. I have not seen another one of equal size in my travels, which have been over a goodly part of this and other lands.

Ocean Springs. C. FORKERT.

GILLENIA TRIFOLIATA.

INDIAN PHYSIC.

NATURAL ORDER, ROSACEÆ.

GILLENIA TRIFOLIATA, Moench.—Leaflets ovate-oblong, acuminate; stipules linear-setaceous, entire; flowers on long pedicels, in pedunculate, corymbous panicles. A handsome herb, two to three feet high, slender and nearly smooth; lower leaves petiolate; leaflets two to four inches long, one-third as wide, pubescent beneath, sub-sessile. Flowers axillary and terminal. Petals rose color or nearly white, eight lines long by two wide. Seeds brown and bitter. Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern United States*.

The histories of plants are not complete without an account of the personalities connected with them. Indeed, the individuals who have had part in bringing to our special notice a plant or its relations to humanity, seem to us as if they were an essential part of the whole story. Very often the generic or specific name of a plant is given in honor of some individual, and we naturally desire to know in what respect he deserved the honor. *Gillenia* would seem, from its construction, to be the Latinized form of some one's name; but no satisfactory explanation has been offered. The plant, itself, has been long known to botanists, as it was among those sent to Europe, in 1680, by the Reverend John Banister; but it was classed with the *Spiræa* family,—at least, to that section of the *Spiræa* family known, at that time, as *Ulmaria*. Morison, who published a history of plants, in 1715, before the binomial system was introduced by Linnæus, described it as *Ulmaria Virginiana trifolia, floribus candidus amplis longis et acutis*,—and Linnæus, himself, having in his earlier works united *Ulmaria and Spiræa*, describes it as *Spiræa trifoliata, foliis ternatis serratis subæqualibus floribus subpaniculatis*. In establishing the binomial system, his evident practice was to retain the first or last term for his specific name. Though not always appropriate, this method preserved the connection of the plant with its earlier history. In this case, the term *trifoliata* is sufficiently appropriate. It continued as *Spiræa* until 1802, when Conrad Moench, in a supplement to a local flora of the city of Marburg, in Austria, noting its tubular campanulate seed-vessel, included stamens, and its peculiar carpels, named it *Gillenia*, as distinct from *Spiræa*, which determination has been accepted by subsequent botanists. But why he named it *Gillenia*, has been a matter of doubt. The author of this chapter has not had access to the original work of Moench. Indeed, beyond the fact that he was a Professor of Botany somewhere in Hesse Cassel, and that he was the author of a few local Floras, little is known of him. Of Gillen, if there ever was a person by this name, nothing is known. Paxton, in his Dictionary, says, the plant was "named by Moench, probably after Gillen, some obscure botanist." The always-careful Darlington says, "Derivation of the name not well ascertained." Dr. Asa Gray has it that it was "dedicated to an obscure German botanist or gardener, A. Gille, or Gillenius." The "Century Dictionary" enlarges a little on this and says "named after Dr. Arnold Gill (Latinized Gillenius), a German botanist;" and it gives the pronunciation Ji-lé-ni-a. There are good philological reasons against the latter suggestions. Wood brushes away the whole line of argument, and suggests the derivation from a Greek word signifying hilarity, from the well-known use of the plant by the Indians, but even here the orthography—two l's being employed in the name—is against the conjecture. It is most reasonable that the genus was named *Gillenia* in honor of some good cultivator of plants at Marburg. The city was, in Moench's time, a famous seat of learning, with reputable schools and colleges; while the gardens of its citizens were filled with rare plants from many countries.

The *Spiræa trifoliata* was, in the language of Sims, "a plant much coveted, increasing but little, propagated with difficulty, and liable to be lost unless placed in soil and situation highly favorable to it. It is scarce in the gardens about London." This was in 1796. Moench

was writing a *Methodus* or arranged account of the plants found in the fields and gardens of Marburg,—and there is little difficulty in believing that he would name the plant in honor of the one in whose garden the rare opportunity of examining it was afforded. May we not say "*Gillenia*,—in honor of a grower of rare plants at Marburg in Austria?"

In recent times trouble has arisen in regard to the names of plants from the fact that species, supposed to be distinct and named as such, have been referred subsequently to one species. In these cases the rule proposed was that the oldest name should prevail. But in many cases the newer name has widely prevailed before the older was noted. The recent effort has been to insist on the older name, and a new rule proposed that a name once used should not be employed again. As it is expressed "once a synonym, always a synonym." The current is not running smoothly in this direction, and our plant has been dragged into the whirlpool. In Britton and Brown's recent work, the "Illustrated Flora of the Northern States," *Gillenia* is dropped, and it appears as *Porteranthus;* the name being given by Prof. Britton in honor of Professor Thomas C. Porter. The reason given for this is that Adanson gave the name *Gillena* to a genus which proved to be the same as *Clethra*. *Gillena* thus became a synonym which Britton and Brown regard as ineligible. But even under this rule the change seems unjustifiable. *Gillena* is not *Gillenia*. If a difference in spelling, though but in a single letter, is to make a name synonymous, many changes will have to be made in other things. The new name, *Porteranthus*, might even be questioned, as *Porterella* has been employed before, though, to the regret of all who would see Professor Porter's eminent services to botany honored, it has been pronounced synonymous with another campanulaceous plant. *Gillenia* will probably prevail for our plant.

As already noted, it was known to English botanists early in the 17th Century; but cultivators, according to a reference in "Philosophical Transactions" n. 337, p. 214, n. 134, are indebted to the famous amateur gardener, Henry Compton, Bishop of London, in the garden of whose palace at Lambeth it was found growing at the time of his death, in 1713.

The common name, "Indian Physic," refers to its use among the Indians. Some authors say that it was customary for some tribes of Virginia Indians to meet together once a year, and go through a regular system of purification, accompanied with peculiar religious services. At these times, the pounded root of this plant was the chief emetic. Clayton to Gronovius, in his report on Virginian plants, says it is "Ipecacuanha, or Indian Physic." As Ipecacuanha is believed to be a Brazilian term, signifying a "sick-making" plant, it is probably an application by the white settlers to this plant. It would be a connecting link between the Virginia Indians and those of South America, if this term were common to both. In noting its properties, Griffith says, in "Medical Botany," "It early attracted the attention of botanists, who found it well-known to the Aborigines as a certain and safe emetic. It is a curious fact, connected with our *Materia Medica*, that there is scarcely any plant having remedial powers, with which the Indians were not well acquainted before any communication with the whites; while there is scarcely one indigenous remedy that has been the result of scientific research,"—a remark that may be applied to many things besides medical knowledge. In regard to its worth, Dr. Griffith says, that after Baum had regarded it as of no merit, he examined it carefully, and concluded that there could be no doubt of its value. The dose given is thirty grains, persisted in till vomiting takes place.

Besides Indian Physic, a popular name is Bowman's Root,—not from any individual of that name, but as synonymous with Indian—the man who uses the bow.

When growing in large masses, as it is occasionally found, it does not present the same pretty effect as when individual plants are growing among sedge grasses, ferns, and other green vegetation. The light color of the flowers, amidst so much verdure, then shows to great advantage. This is the condition in which it is generally found. It occurs sparingly beyond the Alleghenies. It seems most at home in New York, Pennsylvania and thence to Virginia, becoming scarcer till Northern Alabama is reached, which seems its southern limit.

EXPLANATION OF THE PLATE.—1. Lower portion of a flowering stem, from a plant growing on the Wissahickon, near Philadelphia. 2. Upper portion of same. 3. Small setaceous stipule. 4. The tubular campanulate capsule. 5. The 5-carpellary fruit, nearly mature.

WILD FLOWERS AND NATURE.

A MOUNTAIN SUNSET.

——as once I stood,
At sunset, on the moor of Col de Balme,
And saw the mighty mountain seated still,
With crown of everlasting snows, where gold
And rose and violet followed in a change
That seemed of magic,—seated as a king
Among his kindred princes, while before,
Spread out the twilight vale that faded far
'Mid Amethystine shadows; and no sound
Disturbed the silence but faint-tinkling bells
Of distant herds upon the mountain-side.

—HOWARD WORCESTER GILBERT.

TUCKAHOE.—"In clearing our forest land, there is frequently found, not far below the surface, a vegetable product in color and general appearance somewhat like a cocoanut. But it is not uniform in size and shape, like the cocoanut, being smaller or larger, and either round, oval, or irregular in form. Nor has it a hard shell; and a perfect specimen is rarely secured, as they are almost always cut up by the grub-hoe, and the pieces are scattered. Inside of its firm brown coat, it is a mass of grayish white matter, of the consistence of a firm paste, homogeneous, without fibre or grain, or any sign of vegetable organs. Its taste is slightly sweet, and it slowly dissolves in the mouth or in water. On drying, it cracks, and becomes hard like old putty. The white man calls it 'Indian Bread;' the Indians say 'Tuckahoe.' It is said to be mentioned as an article of food, in the accounts of the country written by the early explorers, and any persons having access to such books would confer a favor on the curious, by quoting the passages in which it is named. It is sometimes said to present no indication of having been attached to the roots of trees as a parasite, — on the contrary, in the somewhat numerous specimens that I have examined there has always been a distinct mark of having been detached from some stem.

"The Tuckahoe has long been a puzzle to naturalists. Professor John Torrey made a chemical examination of it, and while he failed to detect, by chemical tests or by the microscope, the presence of starch, he ascertained that the mass consisted almost entirely of pectin, which, in some of its modifications, is the jelly of fruits."

Winter Park, Fla. M. E. BROWN.

There is no doubt of the Tuckahoe being of the fungus family. It has been described by mycologists as *Pachyma Cocos*,—the specific name being derived from the resemblance to a cocoanut, as described by our correspondent. It might be popularly described as a giant puff-ball, growing under ground. The truffle of Europe might also be used in illustration of its natural affinities. Though most forms of fungi grow on decayed vegetable matter, there are others which prey on other fungi. The puff-balls are examples. They can seldom be found attached to such material,—but the odor, which has been described as mushroomy, is evident in the earth where such puff-balls are found. It may, therefore, be conceded that the Tuckahoe may, at times, be found wholly disconnected with the roots of trees.

POISON IVY — RHUS TOXICODENDRON.— In the spring is the time for people to be poisoned by this plant; any one may handle it with impunity at any other time. Just when the new growth is beginning and the sap is running riot through its system, buds bursting, with free growth all along the line, it is at this time that the effluvia of the past year is pouring out into the atmosphere from its every pore through branch and leaf. One may see a silvery sheen on its leaves in the bright sunshine. Touch it not at this time. It does not poison all. I am not subject to it at any time. I would not dare to pull the leaves, bruise them and smear them on my face, in bravado as I have seen children do in years gone by, for I feel certain that it would poison me; but otherwise I handle it, work amongst it at all seasons of the year and receive no harm. There are immense quantities of the vine in this country. Nearly every tree in the woods has a plant or two clinging to it and the fences are loaded with it. I have met with men who have declared to me, that the Boston Ivy and Virginia

Creeper, *Ampelopsis quinquefolia*, would poison them just as easily and as quickly as the *R. Toxicodendron* and that they dare not go near either of them in the spring. But I have always looked upon this last experience as a case of mistaken identity. The two vines generally grow together, are seen clinging to the same trees and the two plants are much alike when denuded of their foliage. As a cure for the poison, Nightshade — *Solanum nigrum* — is used; its leaves bruised, mixed with cream as an emollient; also Healall, *Brunella vulgaris*. Both are used in outward applications. These are the old-time remedies. Doctors must have better methods now. The Nightshade is poisonous (said to be) and used as a poison to correct another poison.

In this part of the world the chief complaint of rhus poisoning comes from colored leaf gathering in the fall. F. K. STEELE.

Festus, Jeff. Co., Mo.

FLORA OF THE INDIAN TERRITORY.—A trip through the prairies of the Cherokee Nation has exploded several ideas prominent in my mind.

The leading one was, that the prairies were as level as a floor; but I find it more hilly and uneven than my native county in East-central Indiana. Limestone crops out in many places and hills are always in view and often several hundred feet high. Nowhere is one out of sight of timber; and small trees and bushes are to be found far from any stream.

Instead of the flora being limited mainly to the grass family, it is widely represented, and many new (to me) and beautiful flowers have already come under my notice, even at this late season of the year. One is an *Asclepias*, with greenish lobes of the corolla ⅝ inch long.

Stamens and crown are purple and white. Another plant is a tall mint, with brilliant blue flowers ¾ inch long, which blooms profusely for a long time and is quite conspicuous, bearing spikes of bloom six inches to a foot in length.

Two new solanums are abundant, and one very pretty with its numerous bright yellow blossoms, and fruit like a chestnut bur—except in size. The other is not interesting, except for its narrow, crinkly-edged leaves and the white appearance of the entire plant. The flowers are large and of a beautiful blue, with orange-colored stamens, but are so scattering as to be hardly noticeable.

The principal feature of one of the ragweeds here is its almost pinnate leaves, with very large intersecting veins. Many varieties of the wild sunflower grow in abundance, ranging in height from two to ten feet.

The lotus, I hope to be able to mention later, with an illustration.

One other surprise for me was that some of the leading business men here are Indians.

Oologah, Ind. Ter. C. E. PLEAS.

The Senior Conductor of MEEHANS' MONTHLY journeyed through the whole Indian Territory, some thirty years ago, and found the Indians—Cherokees, Creeks and Choctaws—had, at that time, reached a high state of civilization. This was chiefly owing to the overpowering genius of one of their chiefs, Sequoi-yah, who, among other things for which his memory should ever be venerated, invented an alphabet. Even at that time, they had their newspapers, printed in their own language as we have them in ours.

The Mammoth Tree of California,—head and shoulders above its fellows, as this Indian was among the members of his race in intellectual capacity,—is believed to have been named, by Endlicher, *Sequoia*, in remembrance of the good work of this great Indian.

And the trees and the flowers—they are as grand and beautiful as our correspondent describes them. The *Vitis incisa*, one of the most admirable of all hardy, herbaceous, climbing vines, now pretty well known in gardens, was first distributed from plants collected in that country, on the journey above referred to. Specimens, difficult to dry, are scarce in herbariums.

MICROBES.—A scientist, looking for microbes, says there are absolutely none on the Swiss mountains at an altitude of 2,000 feet. Here is the place for the purity party; and scaremongers, who are for ever horrifying the public with the dismal fear of microbes; they would have to take their supply with them, most of which are useful to man. It is pleasing to observe that the microbe does not give himself lofty airs, but as a fellow-creature comes down to our level and dwells cheerily in our midst.—*Revue Scientifique.*

THE MANCHINEAL TREE.—In view of the military operations in Cuba, and other places where the Manchineal—or in Spanish, Manzanillo—grows, Governor Daniel Hastings, of Pennsylvania, has had the State Commissioner of Forestry, Dr. J. T. Rothrock, prepare a circular for free distribution, to guard against suffering from the juice of this tree which is so common in those countries. It is botanically *Hippomane Mancinella*, one of the milky-juiced Euphorbia family, which have all a more or less caustic character. The senior conductor has a serious recollection of a sore spot over the eyebrow by a drop of the sap from an allied individual.

Dr. Rothrock has drawn up the following account of what has been said of it—without guaranteeing that the tree deserves all the bad character given it. At any rate, the best that can be said for it is bad enough.

"It is from 40 to 50 feet high; has oval, pointed, toothed, shining leaves, which are from 3 to 4 inches long.

When the fresh leaves are pulled off, a drop of milky juice comes from the leaf-stem.

The fruit is a yellowish-green, fragrant, and somewhat resembles an apple in shape.

BRANCH AND FRUIT OF MANCHINEAL TREE.

If bitten into, it makes the mouth very sore for a time, and may produce serious results.

After handling any part of the tree,—root, leaves or fruit,—rubbing the eyes may cause them to become seriously inflamed.

Mucous membranes (such as the red margin of the lips or eyes, or anus) are particularly subject to its poisonous effect.

It is said by many of the natives to cause

poisonous effects even if the tree is not touched, but by simply being in its neighborhood.

Many persons are alleged to have been injured from being under the tree during a shower, when the drops of water fell upon them from the tree.

Some persons are more sensitive to the effect of this poison than others. In fact, there are a few who are not affected by it at all, just as is the case with our poison oak or poison ivy, the chief difference being that the manchineal affects the mucous membranes, above alluded to, more than the skin proper, whereas the poison ivy affects the skin much more frequently than it does the mucous membranes.

Many persons of experience in the tropics assert that it is unwise to camp near this tree.

If poisoned by the Manchineal, and beyond reach of your surgeon's help, the best thing to do is to wash the part affected freely with salt water.

It is sometimes called by the natives manzanilla (pronounced man-za-ne-ya).

TEMPERATURE AND THE BLOOMING SEASON.—It has been demonstrated only during recent years, that flowers, and even separate parts of flowers, are called into activity by special temperatures adapted to each case. One might suppose that some plants that would grow rapidly under a high temperature would still grow a little under a lower one. But the fact is, they will not move at all until the special degree of heat has been reached. This fact has been found of great value in the culture of nut trees. The aments, or pollen-bearing flowers, will perfect and discharge their pollen before the female flowers appear, if a temperature occurs high enough to start them, but not high enough to satisfy the female flowers in venturing a growth.

It is for lack of pollen that it has such an early grave, and that nut crops are at times failures. Hence planters of nut trees prefer to select plots for planting where the sun's rays may not encourage a precocious advance of the catkins until the temperature required by the female flowers has been secured.

Another practical use of the discovery is in accounting for the failure, at times, of apple, pear and other crops. The stamens will grow and mature under a temperature that is not sufficient to encourage the pistils. The pollen is therefore scattered before the stigmas are receptive. This, too, can be guarded against in some respects by the planting of a few late flowering kinds to help fertilize the earlier bloomers.

Again, the knowledge is useful in teaching us that the old idea of a floral calendar is not possible. A flower that will bloom earlier than another one season, will be later another. For instance, in the vicinity of Philadelphia, the lilac is expected to be in bloom the first of May, and the cherry comes falling in right after. In this year of 1898, the pear and cherry were in full bloom by the 20th of April, while it was rare to find a lilac in bloom at the regulation time.

Even in the sharp controversies between strictly scientific people, the knowledge will have a mollifying influence. In the speculations on cross-fertilization, stress is placed on a supposed characteristic of some species to have the stamens mature before or after the receptiveness of the stigma,—but, according as the season may be gradually temperate or suddenly warm, the same species will be proterandrous one season and may be proterogynous the next.

THE WHITE-FLOWERED FORGET-ME-NOT.—Mrs. Seliger says: "Since sending the white forget-me-not, spoken of in the July number of your valuable magazine, I have found out that it is a wild flower of Southern California, where the people call it Pop-corn Flower, on account of its snowy resemblance, in color, when big patches grow together. It is delightfully fragrant, and the early Mission fathers called it Nievitas, after the Spanish settlers who named it so."

The Botany of California says that, in California and Oregon, there is a form of *Myosotis verna*—a white-flowered species—that has the nutlets unusually large, and which is the variety *macrosperma* of Chapman. This is probably the one referred to in the above paragraph. It does not seem to have been noted before that it is sweet-scented.

PHILIPPINE ISLAND BOTANY.—If the United States acquires a controlling interest in the Philippines, what a rich and almost virgin field will be opened to the botanical collector.

C. W. GREENE.

GENERAL GARDENING.

THE GARDEN.

And all about were dotted leafy trees—
The elm for shade, the linden for the bees;
The noble oak, long ready for the steel
That in that place it had no fear to feel;
The pomegranate, the apple, and the pear,
That fruit and flowers at once made shift to rear;
Not yet decayed, therefore, and in them hung
Bright birds that elsewhere sing not, but here sung
As sweetly as the small brown nightingales
Within the wooded deep Laconian vales.

—WILLIAM MORRIS.

A NATURAL LEAF MOLD PIT.—Almost every large private establishment is able to make good use of leaf-mold. It may be desired for mulching or digging in beds of such plants as rhododendrons, azaleas, ferns, etc., that delight in a cool and moist but well-drained soil, or, in fact, for mulching almost any plant that is located in a dry place or that has been recently transplanted and in need of a regular supply of moisture. Or the mold may be used for making a compost pile for potting purposes; nothing more admirably forms a suitable potting soil, as it is moisture retaining, yet porous—it lightens up the soil, enabling its easy penetration by the roots, and furnishes most desirable plant food.

Leaves are plentiful almost everywhere, and it is worth the trouble of collecting them,—in fact, it is necessary to gather them from the lawns and road-ways, and it only remains to dispose of them in a convenient way. The most admirable use of a natural situation that the writer has ever seen, was at Mrs. Thomas A. Scott's charming residence, near Darby, Pa. The spacious grounds afford many opportunities for the exercise of skilful gardening, and the gardener, Mr. Joseph McGregor, has in many ways shown his capabilities in this respect. The house is on high ground which slopes off to the Darby Creek, embracing a large piece of woodland. This latter has been preserved in a natural state, and not "beautified" by clearing out all the small growth and charming flowers and ferns—a mistake so frequently occuring. The declivity in some parts is quite great, and, in one small ravine, the leaf-mold pit is located. The drive-way through the woods enters and passes near the top of the pit, and as the leaves are gathered they are easily dumped over the edge. In this position, the heap is at no time unsightly, and it is easily handled. Twice a year, the heap is turned, the first occasion being about the middle of July, thus making the decay general throughout the immense pile.

This little woods should not be lost sight of before mentioning the delightful springs of water which have been captured and finally pumped to the house. The cool, refreshing drink they furnish is a finishing touch to the charm of these woods.

SHRUBBERY BENEATH TREES. — Frequent inquiries are made for a list of flowering shrubs that will thrive beneath old trees. The chief difficulty is in the matter of feeding material in the soil and not so much a question of shade, which is not expected to be really dense. Near the surface of the ground beneath old trees, there is a great net-work of roots, which must extract a very large amount of moisture and food. These roots, being more numerous and stronger, do not permit a newly-planted shrub to get much of the necessaries of life, and the new comer is slowly starved to death.

There are a number of plants that delight in shade, and if the soil be kept in condition, there should be no difficulty in growing them in such locations. The main attention should be in heavily mulching the ground above the roots with well-rotted manure, which will furnish both food and moisture. The following selection would prove very desirable and well adapted for such locations: *Ceanothus Americanus*, azaleas, rhododendrons, *Pyrus Japonica*, *Clethra alnifolia*, *Cornus Mas*, *Itea Virginica*, *Ligustrum vulgare*, *Pavia parviflora*, *Berberis Thunbergii*, *Spiræa Bumalda*. *Laurus Benzoin*, *Hamamelis Virginica*, mahonias, kalmias, hypericums, *Diervilla trifida*. Many additions could be well made to this list.

THE NIGHT-BLOOMING CACTUS.—The only true night-blooming cactus, especially so-called, is the *Cereus grandiflorus*. This last long specific name implies its beauty and grandeur. It is one of the most delightfully scented of all the cactus family, blooming, as noted, at night. A large plant, covered with blossoms, is a sight of beauty once seen that is never to be forgotten. The round stems have numerous small angles on them and are covered with delicate spines. These stems are usually about as thick as one's finger. Of late years, another member of the cactus family has usurped the name of night-blooming. This is *Phyllocactus latifrons*. It is one of the broad, flat-leaved kinds, and is so readily propagated that it has now become common. It has a long tube to the flower, which curves downward like a siphon. It does bloom at night, and in one sense is night-blooming; but, it bears no comparison in any respect with the original Night-blooming Cactus.

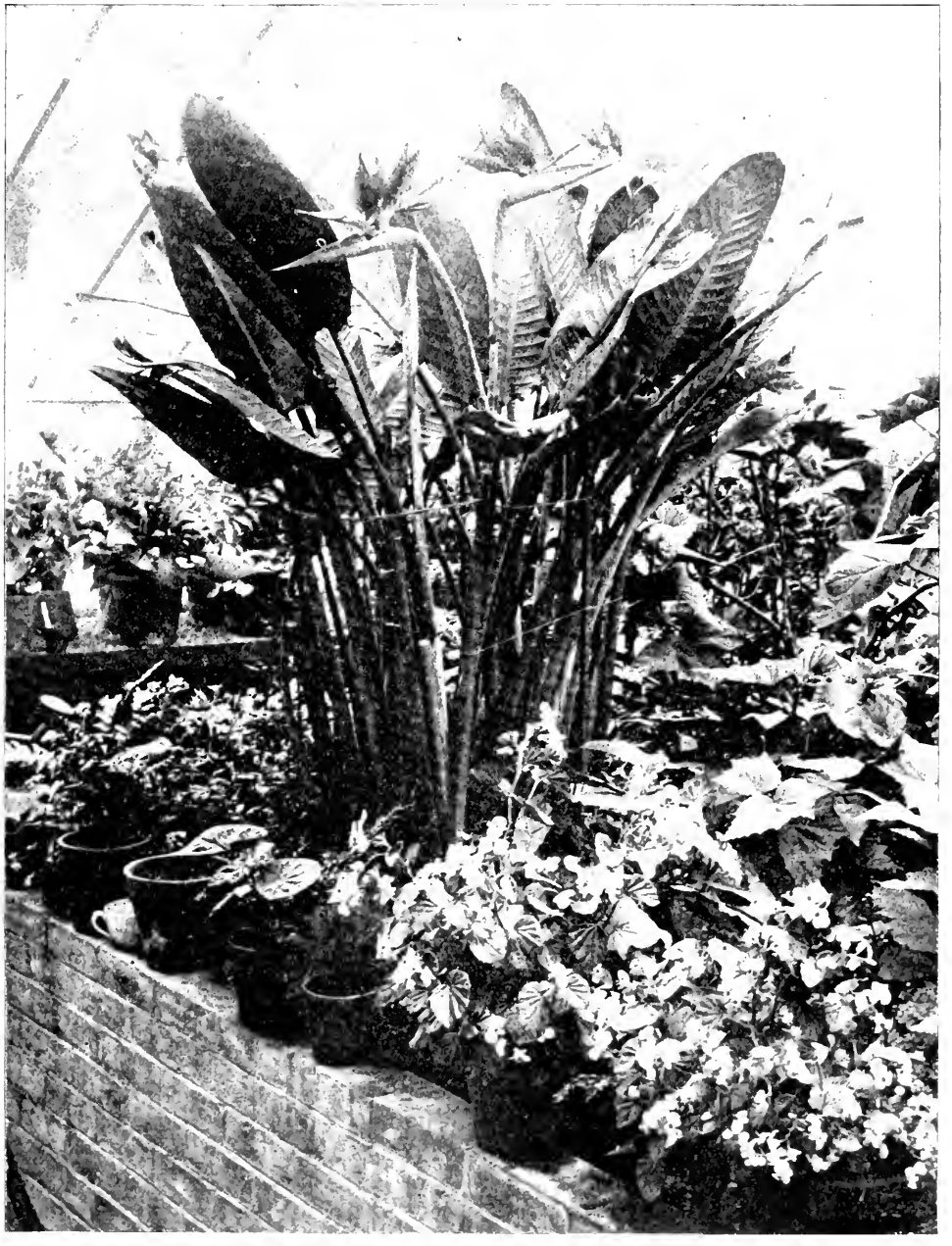
WATERING TREES AT TRANSPLANTING.—A correspondent of *Green's Fruit Grower* says,—"I have planted, perhaps, a million of trees in my lifetime. I have met with but few failures, and cannot remember having watered any of these trees. If the soil is made thoroughly fine before planting; if the soil about the roots is pressed in very firm, as firm as a fence-post; if the soil is left loose on the top, and kept continuously loose by cultivation; the trees will live even though the season may be dry."

In connection with this paragraph, it may be noted that, on one occasion within the experience of the writer, a large number of trees that had been planted in the spring, and had grown tolerably well, showed signs during the following very dry summer of wilting their leaves for want of water. An examination seemed to show that although the trees had been well planted in the common acceptation of the term, yet the earth in many cases was not packed closely around the roots. It was not convenient to water them. The owner was recommended to pound the earth around the trees with a heavy paving rammer. This was done. It is almost impossible to convey an idea of the force used on this occasion. A force was exerted fully equal to that employed by the regular rammers in paving the streets. The earth being very dry was reduced to fine powder by this process, and moisture drawn upwards by capillary attraction. In a couple of days afterwards, there was not the slightest sign of wilting, although no water had been applied, and they continued to grow without any evidence of suffering for want of water until the next rain came. Had the soil not been heavily beaten in this way, their death would have been absolutely certain.

BEAUTY IN POTATO VINE.—Sweet-potatoes in hyacinth bottles as window ornaments,—a pretty idea this of making beauty out of a mere potato vine. I am reminded of a remark of a Swiss girl in this connection, who said they so eagerly desired something green during the long cold winters in Switzerland, that families often put boxes of earth in the cellars in which they sowed lettuce seed from time to time and thus had a little luxury for the table. E. E. ORCUTT.

MELON CACTUS.—This class of the cactus family, usually round, or, as we might say, melon-shape, produces a dense mass of small spines at the crown. This mass has very much the appearance of a dense covering of moss. The flowers, appearing among this mass, are not showy, generally, but the crown always gives an interest to this class of the family. One interesting feature, however, is the production of reddish or purplish fruit. This fruit appears about the same time as the flowers. It is not generally known that the fruit of this class of cactus takes a whole year to mature. The flowers are, of course, fertilized at the time of opening, but after that time the ovarium or seed-vessel remains wholly dormant. It simply makes a green speck at the bottom of the faded flower. About the time when flowering is again resumed, this green speck develops and the mature purplish fruit is the result. This long resting season of the fruit is not peculiar to a class of cactus. There are many similar instances in other families of plants, but it is still a fact of great interest to those who study the life history of plants. All motion is rhythmic. Advances are always by leaps; but there is a vast difference in the degree, and rests between the lines are sometimes of but a few hours duration,—at others there are weeks of intervals, and then again, as in this cactus illustration, a whole year of rest.

THE CARE OF PUBLIC GROUNDS.—One of the greatest difficulties in the way of securing public sympathy for open street spaces and public parks is that of getting them properly managed after the grounds have been secured. Few managers are sensible of their own deficiencies. They are unable to distinguish between men who are capable and men who are mere pretenders. In some cases, the managers realize their weakness in this respect and take the trouble to apply to those who know, for intelligent assistance. In this way, we have a few parks and pleasure grounds in our country which are well conducted. The



STRELITZIA REGINÆ.—SEE PAGE 139

money is spent and the good work tells for itself the wisdom of the managers; but, in a large number of cases, men are selected so utterly unfit for the position they occupy that the public grounds fall into disrepute.

For a while, it was necessary to educate the people up to the desirability of having open spaces and public parks in the vicinity of all towns and cities; but a combined effort for the diffusion of general intelligence on horticultural subjects among the people is of great importance. Comparison is often made between the intelligence displayed in the management of these grounds in the Old World. The chief reason for this is from the fact that intelligent love of horticulture pervades the whole community; and the managers, as well as other people, became alive to what is required to make horticultural work a success. It is the ignorance of the managers, and not the fault of the people, that public grounds are not more popular.

BRIGHT-TWIGGED SHRUBS. — The one who has a large collection of trees and shrubs, or who has the privilege of visiting such a collection, finds something to attract and please him at all seasons of the year. In the winter season, evergreens are particularly interesting, and many of them, hardly noticed in summer, are found to possess many beautiful features when examined at this season. The change of color of foliage which so many make when cold weather comes, is what gives a good deal of pleasure. There are many shrubs which change the color of their bark with the advent of cold weather, and it is of these I wish to refer to at this time. The most notable of these are to be found among the willows and dogwoods. The best of the willows that I have met with are the *vitellina* and its variety, *Britzensis*. *Vitellina* is yellow and *Britzensis* bright flame color. Planted near each other, in masses, the contrast is a most pleasing one.

Among the dogwoods, the best are *alba*, *sericea* and *sanguinea*. *Alba* is by far the best. The twigs, especially those of the latest growth, are blood red. The other two become of a light red.

Andromeda arborea becomes of a deep red. *Fraxinus aurea* yellow, and *Tilia laciniata rubra* of a dark red. The last named is most beautiful in the winter season.

It may not be generally known that these bright-twigged shrubs are only bright in winter. When spring comes and foliage is made, the bright colors disappear,—or nearly so,—not to return until cold weather comes again. JOSEPH MEEHAN.

SCARLET RUNNER BEAN.—The Scarlet Runner Beans are not alone excellent to eat when young, but, to me, the principal delight in them is their attraction of the Ruby-throated Humming bird, which constantly hovers about them when they are in bloom. Then this little bird is the only kind which comes so far north from its southern home; with us, it builds a tiny nest of lichens on a maple bough, and generally eludes the watchful eyes of those who might otherwise capture it. I plant my beans together with a few sunflower seeds on the growth of which they later twine and give a good covering for unsightly places,—besides the sunflower seeds, as soon as they mature, are greatly sought by the Yellow Warblers; while the chickens, underneath, watch for every seed the birds drop. Life is very entertaining for those who have an eye for it.

Hartford, Conn. MRS. W. SELIGER.

CARE OF CENTURY PLANTS.—Replying to an inquiry from a correspondent concerning the proper quantity of water for a Century Plant, her specimen having been overdosed,—it requires little or none at all in winter if kept moderately cool. Keep it dry from henceforth. If you have any chance to plant it in the open ground, in the full sun, during the summer, it will doubtless recover. Re-pot it again in September or October. Then keep it rather dry the following winter. If no opportunity occurs to put in the open ground, put it into another pot or tub with fresh earth, in April next, and give the plant all the sun you can during summer.

CAVE PALMS.—It is stated that, in Yucatan, there are various species of palms growing in caves. These ought to be tried in artificial culture.

C. W. G.

Palms do not require as much light as other plants; but, that they could perfect themselves in utter darkness, should be confirmed before finally accepted.

RED SPIDER.—How does the Red Spider hibernate? I have a large American Wistaria growing up against my house, which was a great beauty not only when in bloom but also by its thrifty and luxuriant appearance. For the four or five years last past, it has been attacked by the Red Spider at the end of June or middle of July, and the older leaves turn yellow and drop off, robbing the vine of its rich and luxurious appearance. The leaves nearest to the ground are first attacked, after which it seems to work its way upward.

Is there a way to destroy the eggs or larvæ of the Red Spider in winter? What can be done to get rid of this nuisance out-doors?

Dayton, Ohio. HORTICOLE.

Spraying with Kerosene Emulsion has been found a complete protection against Red Spider. But the first appearance of the insects' work should be carefully noted. When a few leaves are seen to be mottled green and yellow, it is probably the work of this insect. A pocket lens, which the garden-lover should always have at hand, will aid in easily detecting the little pest. Though not of the true spider family, it will seem like a minute spider, and it makes a minute web, as a real spider does.

Many do not note the presence of the insect, until most of the leaves have been destroyed.

NEW OR RARE PLANTS.

STRELITZIA REGINÆ.—We have pleasure in introducing to our readers what probably but few of them have seen, one of the most attractive of floral beauties, and which, as in the case of a later competitor for royal honors, *Victoria regia*, it was deemed could not be fitly named otherwise than with a royal title. The plant in question is the *Strelitzia Reginæ*. A writer on gardening, of the early part of the century, says of it, "In honor of her late majesty, Charlotte Sophia, Queen of Great Britain, of the family of Mecklenburgh Strelitz, and an illustrious patron of botany."

It was collected by Sir Joseph Banks, at the Cape of Good Hope, when he was the naturalist in Cook's voyage around the world. It flowered in the Royal Gardens at Kew, about 1773, and received the name it bears from Banks himself, in Aiton's *Hortus Kewensis*.

The plant belongs to the same family of plants as the banana,—that is, *Musaceæ*. The lower, horizontal portion, looking like a horn in the picture, is a spathe, out of which some six or eight flowers successively arise. The corollas—the upright portions seen in the picture—are of a bright orange-yellow, while the nectary—the arrow-pointed, horizontal portion of the flower—is of a bright steel blue. Inside the folds of this nectary are the stamens. If the pollen be taken and placed on the stigma, it seeds freely, but never otherwise under cultivation. Like most Cape plants, it flowers only during the winter season. The plants are rather scarce, and bring high prices,—old specimens, which produce an abundance of flowers, are highly prized.

The illustration on page 137 was made from a photograph kindly furnished by Mr. John Coulson, gardener to Hon. Stephen Salisbury, Worcester, Mass., in whose collection the plant is growing.

Mr. Coulson writes that "The plant illustrated was raised from seed. It has eleven spikes of flowers, which last about two weeks in perfection. Plants may be propagated by divisions or seeds,—the latter, by-the-way, are said to be eaten by the Kaffirs. This is a fine species, attracting universal attention."

BROWALLIA SPECIOSA MAJOR.—The pretty purple-flowered novelty recently introduced from New Granada, *Browallia speciosa major*, is quite an acquisition to the general list of greenhouse flowering plants; and, as it is of easy culture, ought to become a favorite with the amateur gardener. Its upright, sturdy bush-form adds greatly to the usefulness in conservatory or window decorations; also in sitting-rooms, where plants will remain in fairly good condition, if properly watered, for a considerable time.

It is also good for cutting, lasting very well, and for mixing with other flowers it is very acceptable on account of color.

It can be raised easily from seed or cuttings. If from seed, sow in the usual way, in pans or boxes, using rather a light compost composed of equal parts of loam and leaf-mold with a good dash of sand, which answers the purpose very well. Cover the seed very lightly with equal parts of sand and leaf-mold that has been passed through a fine sieve, such

as is used to sift flour through. I may here remark that I have found that to be the most satisfactory covering for small seeds of all kinds,—it is light, does not pack hard, and holds moisture thoroughly.

If the sand and leaf-mold are dry when shifted, it does not take but a very few minutes to run enough through the fine sieve to cover a dozen or more boxes of good size.

When the seedlings are up and large enough to handle, they can either be placed singly in small pots, or pricked out in boxes, later to be potted into three and four-inch pots, using a fairly good rich compost. Two parts loam and one of leaf-mold with a dash of bone flour, and enough sand to keep it porous, answers very well. In fact, after it is pretty well started along, it does not seem to be particular about soil (that is, mixtures). A good rich loam, with sand, answers just as well. Seed can be sown either in early fall for winter and spring flowering or spring for summer and fall flowering. Those two sowings will cover the whole year easily, it lasts so long in flower, and if potted on until the plants occupy seven or eight-inch pots, there will be no difficulty whatever in having plants in bloom the year round.

When the sun becomes strong in the early spring months, it is advisable to shade the plants in flower;—the sunlight robs the flowers of their color. For temperature, it seems perfectly at home in a cool or intermediate one, 45° to 55° at night, in winter, and 55° to 65° during day.

During summer, a cold frame is sufficient. As regards water, it should not become dry. Keep it moist all the time, but it should not become sodden whilst in a young state. AMP.

TROPÆOLUM SPECIOSUM.—Isaac Myer, Esq., of Thorp's Lane, Chestnut Hill, Philadelphia, on the 19th ult., brought us flowers of the *Tropæolum speciosum* (Flame-flowered Nasturtium,) a hardy perennial vine native of Chili. This plant is very difficult to grow in this vicinity. Mr. Myer has been importing roots of it from Holland for six years, and this is the first year he has been successful in blooming it. The blossoms are of a brilliant scarlet and very attractive. He would like to be informed if others in the United States have it in bloom.

THE HARDY FLOWER GARDEN.

WINTER PROPAGATION BY CUTTINGS.—As a rule, it is time and money saved to purchase in the fall or spring such stock that it may be desired to increase, as considerable care and conveniences are demanded for paying success. But, frequently these two necessaries are easily had, and it will then be found a subject of interest even if not strictly profitable.

Most of our border plants root readily from cuttings, and to secure stock plants for winter propagation, strong roots should be lifted, before the ground freezes, and potted. Of course, it is desirable to encourage vigorous, healthy growth, so roomy pots and rich soil should be used. Do not be in a hurry to take them into the propagating house, as a perfect rest is absolutely necessary in order to get the best growth; so after potting, they may be plunged in soil or ashes and left there for a couple or three weeks. To avoid a forced, weak growth, they should be introduced gradually to heat.

WILD FLOWERS AND FERNS UNDER CULTIVATION.—In almost every phase of life, human nature is prone to overlook the beauty and good qualities of those things that are near at hand —that have become common sights from childhood—and be continually searching among unfamiliar things for morsels of interest. Children, almost alone, have full appreciation for the ordinary field flowers—daisies, buttercups, golden-rod, bluebottles, Quaker-ladies, Stars-of-Bethlehem, violets and even clover are never too abundant to be slighted. It would be foolish, perhaps, to recommend cultivating any of those in yards in the open suburbs of a large city where they are to be found abundantly near at hand; but it would not be out of the way to advise such a course for more confined localities, where common flowers are only occasionally met with.

The fall season is the natural period for transplanting wild plants to the garden, as the tops show for certain what is being removed. Early fall, while the leaves are yet on, is favorable as respects weather conditions. By cutting about half the tops off, leaving a few leaves to support the plants for the few remaining weeks, will insure success in nearly every case. A light mulching of leaves should be placed over

them when winter arrives to prevent their being drawn out by the frost.

Many additions to the foregoing list, according to the locality, could be made. Especially interesting, is the notice of variations,—such as there are among the golden-rods. Frequently, it will be found that cultivation brings perfection; golden-rods, in the writer's garden, attain a great height, making magnificent specimens.

LYSIMACHIA CLETHROIDES.—So many beautiful plants have been introduced from Japan, during the last half century, that one might be pardoned for wondering what our gardens did for attractiveness before we had these introductions. The one here introduced to the reader, is one of the comparatively recent additions. It is one of the losestrife family. We have a number among American wild flowers, but these are yellow, while the one here represented is white. It has no common name, and we must introduce it as *Lysimachia clethroides*. The resemblance of the flower to the head and neck of a bird is suggestive of some suitable appellation. It is a charming hardy herbaceous plant, flowering profusely just after midsummer. It is rather inclined to spread unduly, but easily kept in close quarters by a little care in due season. For cut-flower purposes, it is scarcely excelled, by reason of its graceful and lasting flower-spike. As may be inferred from the illustration, the flowers open successively, commencing with the lower ones, making their blooming period very much extended. Its common name is derived from an early legend that it was a peace-maker. The name has therefore been rendered lose-strife instead of "loose-strife."

FRUITS AND VEGETABLES.

GRAPES IN GREENHOUSES.—In consequence of the improved methods of transportation, with which we are all familiar in recent years, less attention has been given to the raising of fruits under glass than was given in former times. It is so easy, now, to get "hot-house" grapes from California, or from the Old World, that one does not think it worth while to raise them in greenhouses as it was formerly the practice to do. One could scarcely think of putting up houses for raising grapes as a matter of profit in market culture. Still, there is great pleasure in raising hot-house grapes. A glass house filled with the ripening fruit of the vine, with the vines themselves in perfect health, is as much an object of pleasure as a house full of roses or carnations. Aside from this, the fruit itself is far more tasty than that which is imported from distant centres. A decline of grape culture under glass is much to be regretted.

LYSIMACHIA CLETHROIDES.

COLUMBUS GOOSEBERRY.—I herewith send you a sample of Columbus Gooseberries. They were picked as they grow, as the enclosed two branches will show. We grow them as single-stem or standard form of bushes, in the open, without any shade whatever and within almost a stone's throw of the salt water.

We are never troubled with any signs of mildew whatever, having grown them this way for the last three seasons with equal success. We grow, also, Industry, Pearl and several other sorts, but Columbus is the leader, though they are all equally free from disease. The only pest that troubles them is the Currant Worm, but it is easily destroyed with hellebore or Hammond's Slug-shot which we find very effective.

The bushes receive no special attention whatever, only a liberal manuring in fall or spring, with the ground well tilled and kept free of weeds.

Greenwich, Conn. JOHN W. DUNCAN.

It is said that the great perfection to which the gooseberry has been brought in England, is mainly due to the weavers of Lancashire, who make a hobby of growing them in their cottage gardens, raise new kinds from seed, and enter into a friendly rivalry as to who shall have the largest and best. Those sent by Mr. Duncan are a smooth white kind, and equal in size and productiveness to those which the Lancaster weavers would be proud of.

We are also glad to have this endorsement of Hammond's Slug-shot, which we have long looked on as one of the simplest and best of insecticides, and which is now coming into general use.

ORDER OPPOSED TO GARDEN PESTS.—There is important work to be done in the fruit and vegetable garden in late summer and early fall, in getting rid of insect pests. Such work is frequently neglected for two reasons, viz.: the effects of insect ravages are not as noticeable at that season, permitting a forgetfulness of what has happened; and one is apt to consider it fruitless to attempt an attack because his neighbor is negligent in that respect, and the pests may travel to his garden.

No garden can be too small to call for good attention, in fact, the responsibility is greater, though the reward may be chiefly in feeling that the work has been thorough. It would at least set an example to others and start them to make comparisons.

Fruit trees—particularly apples—should be examined for borers which bore under the bark and a short distance into the wood. The chief injury is done by one which enters at the base of trees, just at the surface of the soil. Scrape away the soil and the loose bark with a knife to locate the entrance of the borers, though they are easily traced by the sawdust. By inserting an easily-bending wire, the worm can be crushed.

Other kinds of borers run through the stems of vegetables. By burning all rubbish, like potato tops, as soon as possible, these are destroyed. Raspberries, currants and gooseberries, are troubled in the same way, the larvæ, or young, remaining in them all winter in a dormant state. Examination of the canes will soon reveal the presence of a hidden foe, as they will appear weak and not solid. The course of destruction is the same as for the others.

Old wood-piles and rubbish heaps are winter quarters for many kinds of insects. Even the loose bark on large trees will be found to shield cocoons. To defeat the enemy in this position, many persons coat their trees with lime-wash, or else scrape off the loose bark. The immensely destructive Codlin Moth, the cause of so many wormy apples, would be greatly held in check if cleanliness were more the rule.

DE TONGRES PEAR.—Dr. Geo. W. Russell tells the *Hartford Times*, that a Belgian variety of pear, De Tongres, of great reputation in its own country, has been in bearing for 12 years in his garden, near that city. He finds it excellent in quality, and very handsome. It ripens from the middle of October to the middle of November. Mrs. Seliger, whose notes in the *Hartford Times* are models of intelligence, says it is regarded as one of the eight best pears in Germany. It was raised by Mons. Durandeau, of Tongres.

FAMOUS ENGLISH APPLES.—English Gardeners have found no apple to supersede the old Ribston Pippin in popularity. This, with Blenheim Orange, and Cox's Orange Pippin, they regard as their three best.

BIOGRAPHY AND LITERATURE.

THE ACTIVE MAN.

O'er vales that teem with fruits, romantic hills,
(Oh, that such hills upheld a freeborn race!)
Whereon to gaze the eye with joyance fills,
Childe Harold wends through many a pleasant place.

Though sluggards deem it but a foolish chance,
And marvel men should quit their easy chair,
The toilsome way, and long, long leagues to trace,
Oh! there is sweetness in the mountain air,
And life, that bloated Ease can never hope to share.
—BYRON.

THE METRIC SYSTEM. — Prof. Benjamin Smith Lyman, the well-known geologist and Civil Engineer, of Philadelphia, has issued an able pamphlet against the proposed legislation by Congress, legalizing the French Metric System. Among other good things, he says:

"If our early predecessors, in learning to reckon, had but omitted to count their thumbs, and had taken eight instead of ten as the base of notation, they would have saved the world a vast deal of labor, and would have almost abolished the use of vulgar fractions. The most natural, easiest, and therefore commonest mode of subdivision is by halving again; the next easiest is by dividing into thirds; then, much less easy, into fifths, sevenths or tenths. If eight, instead of ten, were the base of our arithmetical notation, so that every place to the left gave a value eight times greater, and, in fractions, every place towards the right from the comma a value eight times less, the fractions of halves, quarters and eights would be expressed simply by a single figure; sixteenths, thirty-seconds and sixty-fourths by two figures, and so on. Comparatively seldom would it be necessary or desirable to express other fractions than these most natural ones, that are constantly required even with our uncongenial decimal fractions.

The present measures, with the foot, bushel, hogshead, gallon, pint, pound, and others, would harmonize admirably with the eightfold notation and numeration, and comparatively trifling changes only, without the slightest confusion or effort, would be needed for perfection, if exact correspondence of the parts should be considered desirable. The foot itself would be ideally beautiful, natural, universal, non-political, rational unit, derived by twenty-seven times progressively halving the equatorial circumference of the earth."

THE AGE OF TREES.—MEEHANS' MONTHLY of April, 1894, says: "There is a Tulip Tree known to be two hundred years old, in Berwickshire, England."

Humboldt describes an oak tree he saw in France, which was estimated to be two thousand years old.

In the Louvre, Paris, Mrs. Bullard saw, in 1850, an orange tree produced from seed in 1421. After flourishing under eighteen reigns, and blooming 430 years, it was then supported with iron rings, etc.

Cologne has a 300-year-old rose-tree, it is said.

In a glass house in Hampton Court, England, a grape vine has been exhibited as being 250 years old.

Dr. Rothrock says the age of trees cannot always be known by their rings. That in the tropics trees sometimes make three or four rings annually. Also that the rings may be more on one side than another.

The Weeping Willow.—Alexander Pope introduced the Weeping Willow into England. Seeing some unknown twigs around some article from the Orient, he planted them in his garden at Twickenham, saying they might be something new, and so it proved. Slips were sent from the poet's willow to a friend in the United States from whence have sprung thousands. Pope died in 1744, and his willow fell to the ground in 1801, notwithstanding the utmost care. Thoreau spoke of its being only the pistillate plant in this country, while some think the staminate may have later been introduced from Europe.

The maple trees of dear New England, so vivid in their autumn coloring, both the Sugar Maple and the smaller Rock Maple, outvie

in memory any exotic; and the seed lobes children played with as table knives, it seemed so pretty to have them in pairs, though a seed was found only in one, so lavish is nature of order and beauty.

San Diego, California. MRS. E. E. ORCUTT.

The age of the tulip tree referred to was not as a specimen of longevity, but as indicating the probable first appearance of this American tree in English gardens.

The story of Pope and the Weeping Willow tree, like so many of the so-called truths of history, has long been remanded to the region of the myths. No basket was ever made from branches of the Weeping Willow. The branches are like glass—too brittle to weave. It is now conceded that the most probable supposition is that it was brought from China by the Dutch, who alone had intercourse with China,—and from Holland was sent to Hampton Court.

GENERAL NOTES.

BOULEVARDS IN CITIES.—The great boulevards of the Old World are magnificent in comparison with the comparatively narrow avenues to which the name of boulevard has been given in America. It is rare that the name of boulevard is given to any avenue in the Old World that is less that 200 feet in width.

CITY PLAY-GROUNDS.—Out of the grand movement for public parks in towns and cities, has grown a greater desire for open spaces or play-grounds within the brick and mortar area itself. Philadelphia is keeping pace with this evolution of civic thought, and the movement, originated by Councilman Meehan, in 1886, for small parks in Philadelphia, is being developed considerably in that direction. One of these, the John Dickinson Square, situated in one of the squalid portions of the city, has been fitted up wholly as a play-ground for smaller children, and is regarded as a model of its kind.

Another of these plots, comprising nearly 300 acres, in an unimproved part of the city, yet which cost over $300,000, also situated in the poorer portion of the city, is to be fitted up mainly under the play-ground idea. The city has voted a thousand dollars as premium for plans that are to keep this play-ground idea uppermost, and ten thousand to make a beginning of the great work after a comprehensive plan shall be adopted. A. S. Eisenhower, Chief of the Bureau of City Property of the city, has the matter in charge. There are to be arrangements for summer boating, winter skating, covered play spaces for children, drilling ground for military and police organizations, ground for athletic sports,—and besides these, beauty spots with umbrageous trees, where the aged and the thoughtful can have quiet nooks to themselves.

PARK DEGENERATION.—Some of our great public parks are degenerating to mere cemeteries, in appearance, with little else to attract but monuments and civic public works.

Garden and Forest in the past published many articles on the dangers to public parks, and the attacks on them, not only by the ignorant and vicious, who deny their utility and wish to exploit them solely for their own pecuniary benefit, but those of sculptors and architects, who regard the parks simply as good places for the display of monuments and statues. In one of its articles, the editor remarks: "It is certainly clear that parks like Central Park are, in themselves, more valuable, even from the artistic point of view, than any object which can be placed within them, and that their beauty is of such a kind that it may easily be marred by the intrusion of an object in itself artistic."

The once famous, and still beautiful, Fairmount Park, at Philadelphia, embracing 2,791 acres, is fast following in this degenerate path. It was used one year as a camping ground for the State Militia, with many thousands of spectators daily to see the drills. A large number of valuable shrubs were totally destroyed, and partial destruction was everywhere. Huge water reservoirs, with unattractive banks, have been placed within it; and, at the present time, acres of sand-filter beds are being talked of to be located there. A trolley line has been constructed through it, and more "ornamentation" in the line of marble and granite is under consideration. It is no wonder that talented subordinates get disheartened, and try to take life as easily as possible. If they come at 9 A. M., and go at 3 P. M., and draw their salaries, they feel that they are at least keeping ignoramuses out of place.

EPIPACTIS GIGANTEA.

DOUGLAS' HELLEBORINE.

NATURAL ORDER, ORCHIDACEÆ.

EPIPACTIS GIGANTEA, Douglas.—Stout and leafy, one to four feet high, nearly smooth; leaves from ovate below to narrowly lanceolate above, three to eight inches long, acute or acuminate, somewhat scabrous on the veins beneath; raceme pubescent; flowers three to ten, greenish, strongly veined with purple, with large foliaceous bracts, on slender pedicels two or three lines long; sepals ovate-lanceolate, six to eight lines long, the upper concave; petals slightly smaller, lip as long, the saccate base with erect, wing-like margins, strongly nerved and the nerves callous, tuberculate near the base, the dilated summit ovate-lanceolate, entire, somewhat wavy-crested; Anther nearly two lines long; capsules oblong, eight lines long, reflexed or spreading.—Brewer and Watson's *Botany of California*. See also Coulter's *Manual of Rocky Mountain Botany*.

In common with a number of interesting native flowers, Douglas' Helleborine is not ostentatiously showy, blazoning with a glare of color the woods and meadows in which it grows; but, like so much we meet with in the world that improves with acquaintance, the flowers are beautifully marked when examined with a pocket lens; and, when numbers are found growing together, the plants present, in their general habit and character, a striking appearance. It was not known to American botanists, till discovered by Nuttall and by Douglas in our northwestern territory early in the present century. Nuttall's specimens were gathered on the Wahlamet River. He supposed it was a new species of *Serapias*, and he proposed for it the name of *Serapias macrophylla*. It does not appear that this name was ever published. About the same time, Douglas was collecting it on the Columbia River about Fort Vancouver, and Fort Scouler, and referred it properly to the genus *Epipactis* which had been separated from *Serapias*, and under the name of *Epipactis gigantea* of Douglas, it was first published, by Sir William Hooker, in his "*Flora boreale Americana*," in 1840.

The plant varies very much in its habits and characters in different localities, sometimes approaching closely its near relative, the *Epipactis palustris* of the Old World. The author's first acquaintance with it was while collecting in the Yosemite Valley, in California, in 1883. It was found only in a scattered condition, having no marked effect in the wild-flower scenery. The specimens were counterparts of the drawing given herewith, taken from a plant from Franktown, Nevada, kindly furnished by Mrs. Ross Lewers. This may therefore be taken as its average type of form. The leaves, in some localities, may be broader or narrower, but its chief variations are in the stiffness or slenderness of the flower stem. In some instances, this is slender and coiling, as if half inclined to take on a twining habit.

Its popular history can only be considered in its genealogical relationship. In the far-away past, they were all known as *Serapias*. A number of these were separated, eventually, as *Epipactis*,—"by Heller," says Watson,—"by Robert Brown," say Britton and Brown,—"by Swartz," says Willdenow,—a difference of opinion which shows how difficult it is to decide questions of priority in connection with botanical nomenclature. The Serapians were distinguished from other families of orchids early in botanical history. In the celebrated "Herbal" of Gerarde, published in 1636, it is noted that "there be Sundry sortes of Serapias, whereof some be male and others female; some great and some of a smaller kind, varying likewise in the colour of the floures, whereof some be white, others purple, altering according to the soile or clymat, as the greatest part of bulbous roots do. Moreover, some grow in marshie or fenny grounds, and some in fertil pastures lying open to the sun, varying likewise in the shape of their floures; retaining the form of flies, butterflies, and gnats." Of the *S. palustris*, the Old World representative of our species, the "Herbal" says "It hath a thick knobby root, divided into fingers like those of *Palma Christi*, whereof it is a kind: from which rise thick, fat and spongeous stalks set with broad leaves

like those of plantain, but much longer, even to the tuft of flowers, but the higher they rise to the top, the smaller they are." This would be a very good popular description, even for our plant at this day. They were also called *Helleborine* in these ancient times—an adoption from Greek signifying a plant like a Hellebore,—that is to say, the *Veratrum* from which Hellebore powder is made. The leaves of the species generally resemble leaves of the true Hellebore, as may be noted in our illustration. The Hellebore plays an important part in the mythological but dramatic story of Philomela. Progne, Philomela's sister, vowed vengeance on Tereus, and tried to induce Helleborus to poison him. He refused, but was finally dragged into a plot to destroy Tereus' son, in vengeance for his treatment of Philomela. Just here the gods interfered,—so goes the story,—and Progne was turned into a swallow, Philomela into a nightingale, and Helleborus into a poisonous plant still known by his name. This class of orchids is still known by the common name of Helleborines, in England, and this has been adopted in this chapter for this species.

The plant figured was sent by Mrs. Ross Lewers, in July, 1879, with the following interesting account of its locality and associates ;—It is found in green patches among our pine timber clearings, and in the bottoms of the hills, and in the sage-brush plains. A number of springs rise along our mountain sides, and by the sides of the streams flowing from these, alder and willow bushes grow, shading the ground, in some places, and having open sun-lit spots in others. Occasionally, little pools of water are formed, on the surface of which the *Mimulus luteus* and the little musk plant seem to float. On the moist ground around these pools and borders of the streams, is a covering of green herbage—green even when under the snow. Mosses, asters, lupines and golden-rods abound. In the higher and drier ground near by, blue pentstemons love to grow. Higher on the hill sides, the Manzanita, wild laurel and shrubs, with yellow berries appear, together with yellow dock, and young pine and libocedrus, which are taking the places of the alder trees that have been cut away. These are the homes and companions of the *Epipactis*. The largest and tallest plants are found among the rotting bark and branches of the former pine trees cut away. The true Hellebore, *Veratrum album*, grows with its mimic, the Helleborine.

A study of the plant as collected in many widely separated localities, affords a valuable lesson in regard to the difficulties botanists have in defining the limits of species. A specimen gathered on the Wahlamet, by Nuttall, and on which he founded his *Serapias macrophylla*, has the lower leaves very broad and tapering to a point, very suggestive of the specific name he proposed. These are about six inches long, and two and a half wide. When the flowering stage is reached, there are three pendulous pericarps in the axils of the large leaves which we now, by reason of the flowers, come to regard as bracts. Another growth of several flowerless leaves follow, before the formal flowering stage is reached. From this forward, the stem is so slender and flexuose, that an ill-informed examination might well suggest that we were dealing with a climbing plant. Other specimens, collected by Brandegee at Priest's Rapids, Washington, show this inclination to twine. Texan specimens, collected by Charles Wright, do not commence flowering till the twelfth leaf has been reached, while the pericarps are remarkably long and slender,—about one inch in length, and not over a line wide! In many other ways, are there striking variations. The one illustrated by Hooker, has the stiff, solid spike, with no apparent tendency to become slender and twining, as in the one from Nevada, that we here represent. In a letter from Mrs. Lewers, in 1896, she remarks that she has never seen any tendency of the plants, of that portion of Nevada, to become as slender and flexuose as the ones described. Large patches of over twelve or fourteen feet form striking objects. Some of the specimens were five or six feet high, and the leaves large, and with a bright glisten when the sunbeams caught them. Near these, for companions, were *Lilium*,—probably *Bloomerianum*,—wild roses and bracken, with currant and thimbleberry bushes.

EXPLANATON OF THE PLATE.—1. A plant from Nevada, showing the fleshy fibrous roots 2. Remains of the flower stem of the past year. 3 The new flower stem, proceeding from a bud formed at the base of the one of the previous year. 4. The upper portion of the same. 5. A flower of the natural size. Small section of a stem from another plant, showing the nearly mature and pendulous seed-vessel, with the remains of the flower at the apex.

WILD FLOWERS AND NATURE.

AN OCTOBER MORN.

It was a pleasant morning, in the time
When the leaves fall—and the bright sun shone out
As when the morning stars first sang together—
So quietly and calmly fell his light
Upon a world at rest. There was no leaf
In motion, and the loud winds slept, and all
Was still. The lab'ring herd was grazing
Upon the hill-side quietly—uncalled
By the harsh voice of man.

—N. P. Willis.

Epipactis gigantea.—In addition to what has been said of *Epipactis gigantea* in the main chapter it may be further noted that in studying the different variations as they occur in different localities, we are apt to refer them to the influence of differing conditions. In brief, we say the environment induced the change. Although it seems as if this must be, no one has any clear idea of what is meant by the expression. Changes quite as great as any found in distant places may be often noted in the nearer localities. Widely-differing plants, growing side by side,—and, frequently, the differences, widely separating the individual plants, may have been produced from seed all maturing in the same seed-vessel. But these variations, once coming into existence, are hereditary,—and it may be that the variations, attributed to environment, might, with as much justice, be referred to the peculiar plant which originally founded the colony. At any rate, plants of one class of variation show no tendency to be influenced by the environment when brought together with some other form. Mrs. Lewers' notes, in the letter referred to, remark on a plant brought from Emerald Bay, in Lake Tahoe, in 1893, which came up among some gentians brought from there, which never reaches an annual growth of over ten or twelve inches.

It has a rather wide range over our continent, especially if we consider a closely allied form in the northeastern part of the United States, which Dr. Asa Gray named *Epipactis Helleborine*, but which is believed now to be identical with *Epipactis viridiflora* of Reichenbach. The acknowledged species, in its various forms extends along the mountains of the Pacific Coast from Washington to Southern California, from thence westwardly, from Nevada, Colorado, to Western Texas.

The Bracken in a New Home.—I send you, under separate cover, a specimen of a fern which has been growing for the last five years, to my knowledge, in the joints of a cemented stone retaining-wall which is on either side of the N. Y. C., and H. R. R. R. Co.'s tracks in this city. The tracks are depressed below the street surface from six to twenty feet. The wall was built about 1870 or 1871, and, at 53rd Street, where this fern was found, is about 16 feet high; the fern growing about 12 feet above the tracks in an angle of the wall formed by the abutment of the 53rd Street bridge, and is exposed to the direct rays of the sun from about 10 A. M., until sunset. The joints between the stones are very close,—hardly ½ inch,—and the ferns are growing in the crumbling cement. It struck me as strange that the ferns should be found growing in this location which is so dry and exposed to the full sun, in a closely built-up city.

Will you please name the fern for me?

Frank S. Curtis.

New York City.

This was a barren frond, and its broad pinnules and soft, flimsy character, made it a puzzle for a time. By examining the herbarium of the Academy of Natural Sciences, of Philadelphia, it was seen to be one of the outlying forms of the common brake fern, *Pteris aquilina*. There was here a mate to it from the herbarium of that erratic botanist, Rafinesque, who was evidently so impressed by its special characteristics that he was disposed to make a new genus of it, and had given the specimen the provisional name of *Pteripteris aquilinoides*. This plant has certainly earned some family distinction by growing out of the fissure in a stone wall,—or possibly from the collected dust on the capping of an abutment!

FLORA OF BURNED NEW ENGLAND FORESTS.—North and west of the greater mountains of New England, in the valleys of the larger streams, where, in our ascent, cedar has long since given way to balsam, larch and spruce, lie level terraces or uplands from which the timber has in large part been removed by fire or axe. Some of these barren terraces have the look of neglected fields, which might now well be called heaths, for nearly all their flora belongs to the heath family. What struck me, on passing one of these heaths for the first time, was the quantity of Pearly Everlasting (*Anaphalis*) that whitened large areas. I made a search for *Gnaphalium decurrens*, but missed it; finding, however, stunted bushes of *Kalmia glauca* in fruit; and the graceful bunches of pink downy seed-vessels of *Rhodora*, with a long withered thread of a style from the tip of each. The bilberries revelled; sweet and dried up Canadian Blueberry, with leaves hairy beneath, was chief.

Bright-colored *Viburnum cassinoides* was quite abundant with deep blue and bright red fruit in the same corymb, and leaves of many shades of orange, purple and crimson. The curious magenta flowers and long rod-shaped pods of Fire-weed were abundant, some of the pods splitting and showing a plumose arrangement of the downy seeds arranged in two rows along a central axis. Some mountain maples had intruded and were already (Sep. 10) crimsoning. The low, bushy tree (*Acer spicatum*) seems to favor lands which have been cut or burned off as does also the Choke-cherry (*Prunus Virginiana*), so common in the White mountains, often lining the roadside with ten-feet bushes, from the branches of which hang abundant clusters or racemes of translucent red fruit, like immense currants, but food only for the birds,—though I myself enjoyed them about the middle of August, before they were fully ripe and before the astringency was excessive. It seems, unlike the persimmon, to be less astringent when just ripe, and to become more so as it progresses into dead-ripeness and its stage of withering. None last until the first frost. It is rare to see a Choke-cherry in the middle of September.

I cannot leave the terraces without speaking of a certain aster (*Aster paniculatus*), which was so typical of road-sides and open places all through the mountains. The aster was an especially handsome species, stem a little tinged with rose, all of the abundant leaves a clear dark green; and the ample, somewhat flat-topped panicle of white flowers, a compact mass well supported at the top of the stout, column-like stem.

Tawny grass occupied such portions of the field as were not otherwise occupied, and bright skies and dark firs for a back-ground made the place a color study of unwonted attractiveness.

A. NEWLIN WILLIAMS.

AMPHICARPUM PURSHII.—In the June issue of MEEHANS' MONTHLY, a plate is presented of Pursh's Amphicarpon, a singular grass that pushes its flower buds into the sand and perfects seeds after the manner of the ground-nut. The grass is confined to a few localities along the Atlantic coast. Our generous correspondent, Mr. C. F. Saunders, 1441 North 16th Street, Philadelphia, has been fortunate in drying a number of specimens from near the locality where Pursh originally found it, and will send a specimen freely and cheerfully to any one enclosing to him 5 cents in stamps for postage.

Mr. Saunders, also furnishes the following new facts in relation to the life-history of this remarkable grass.

"My plants are young and some of them have not developed the panicle of conspicuous flowers; but all are supplied with the underground buds or pods, which form the special interest of this grass. I was interested to note that the subterranean flowers got to work and finished up so much sooner than the conspicuous ones. One youthful plant, hardly an inch high, had already started its subterranean bud. I also noticed that in almost every plant, of the dozens I gathered, the shell of the seed from which the plant sprung still clung amid the roots."

FREEZING OF THE SAP IN LIVING PLANTS.—Among a number of paragraphs which have come to the office of MEEHANS' MONTHLY, the following is a curious one. It is from the pen of Mr. H. E. Van Deman, in the *Rural New Yorker*.

"Professor Burrill told me, in a conversation several years ago, and he has stated the same thing publicly on several occasions, that the sap of trees certainly does not freeze at as

low a temperature as 12 degrees below zero, and possibly not at all. He has tested the matter repeatedly with the microscope in the open air. But he said that a part of the water of the sap within the cell walls is sometimes forced, by the contraction of the woody tissues about them, to give up the chemical combination with the various materials that go to make the sap, and pass outside the cell walls; then it will congeal and form icy crystals."

The coming here for comment is curious from the following circumstance:

Over thirty years ago, Mr. Meehan was engaged to give a series of lectures before the very university of which Prof. Burrill is now an eminent professor. In one of these lectures, Mr. Meehan elaborated this point, and it obtained wide attention. Some one brought it to the notice of President Clark, then at the head of Amherst College. Said he, "How absurd! of course the sap of living plants does freeze."

There could be no appeal from such a powerful argument, and Prof. Burrill must be careful of a crushing blow if there be any Prof. Clarks yet left in the land.

VERBASCUM THAPSUS, COMMON MULLEIN.—The mullein is a very common weed, considering that it does not belong to this country. As a stranger, it has made its home amongst us and is one of the most valuable plants we have. Such strangers as this plant is are always welcome, for it contains, beneath its woolly coat, juices which are extremely valuable in a medicinal way. The leaves, green or dry, boiled down make an extract which, mixed with sugar, is one of the very best medicines to cure colds and all lung troubles as well as kidney troubles. The leaves dried are used also in a pipe for smoking, many persons preferring to use them thus—to cure their colds. There is a story, which used to go the rounds, of an old man who was blind yet rode horseback. He was always accompanied by a negro body guard, also on horseback. This old man made his living by finding good land in the poor worn out fields of the east for the owners of these fields. The latter would pay him good prices for showing all the rich spots in the fields. On his arrival at one of the fields on which he would operate, he told his bodyguard to hitch his horse to a mullein stalk. If there were none around, his man would tell him so, when he would ride on. If there were no mullein stalks in the field, there would be no good land in the field. If mullein stalks were plentiful, large and tall, he would show the good land by having his horse hitched to the tallest stalks. The land has got to be desperately poor if it will not grow mullein.

Festus, Jeff Co., Mo. F. K. STEELE.

ABSORPTION OF MOISTURE BY TREE TRUNKS.—Do bodies of trees absorb moisture from the atmosphere?

Some noted men deny it. Last spring, when trees were in full leaf, I painted the entire body of a small maple, and, in three weeks every leaf would crumble in the hand.

Another experiment I tried last summer with a large Sugar Maple.

I found that, when the mercury in the barometer stood the highest, the tree would take in water faster than when it stood lower, and finally it would take none, when the tree would stand "at Zero," as I call it.

Moscow, Vt. T. WHEELER.

SELF-SACRIFICE IN NATURE.—Prof. Thomas Meehan, concluding an essay on the enormous waste of sweet secretions in the vegetable kingdom, in the "Proceedings of the Academy of Natural Sciences of Philadelphia," remarks:

"So far as we can now see, there is no use whatever to be served by the plant in the great battle of its life, and this, Mr. Darwin frankly owns. To him it is an act of excretion of useless matter.

"To us who believe individual life is not wholly for itself, but that every act is of some use in the general economy of nature, the new field opened up is one of extreme interest. Observations in this beautiful field are too limited to warrant any general deduction as to the purpose of these stem-bearing glands."

THE REDWOOD.—Of the beautiful *Toxodium semperviens*, or Redwood, a Californian friend says:

"Our world-renowned Redwoods, rising to a height of over 400 feet and enlarging while yet young to a diameter of 30 to 40 feet, with a life of 3,000 to 5,000 years, are not approached by any vegetable growths elsewhere."

GENERAL GARDENING.

WHY PLANT WE THE APPLE TREE.

What plant we in this apple tree?
Sweets for a hundred flowering springs,
To load the May wind's restless wings
When from the orchard row he pours
Its fragrance through the open doors;
O world of blossoms for the bee!
Flowers for the sick girl's silent room:
For the glad infant sprigs of bloom,
We plant the apple tree.

—BRYANT.

AN EVERGREEN SCREEN.—A correspondent asks what would be a good screen to place before a neighbor's barn and subject to a north-west exposure. To obtain the desired result most quickly, nothing can excel the Norway Spruce. Should a thick screen be desired, it must be watched, and pruned judiciously if a rank growth commences. It is hardy and scarcely shows the effect of a severe winter in the loss of a few leaves at the tips of branches. Where the area permits, and at least two trees are used in the screen proper, a tasty arrangement could be made by putting some of the rarer evergreens in front of the spruce to form a group. The spruce would form an admirable background for such colored retinisporas as *squarrosa* and *plumosa aurea* and at the same time be a protection to them from the winds.

VERMIN IN HOT BEDS.—B. J. Stillman, New York, asks how to keep rats and mice from violet beds under glass. They are usually trapped or poisoned. The *Florists' Weekly Review* gives the following as being particularly effective:

"Get some of the old-fashioned black sulphur matches, now generally called eight-day matches. Cut off the black ends and put six or seven of these black tips in some bread that has been moistened in milk, and roll the bread into marbles about the size of common playing marbles. Have six or seven tips in each marble. Rats seem crazy for this poison, and after eating one marble they will not live to see another day."

TREE TRUMPET VINES.—It is hard to conceive of a prettier object in its way in midsummer than a trumpet vine which has been trained in tree form. Its large scarlet, trumpet-shaped flowers are then displayed on every side, brightening up a lawn as nothing else can do as well at that season.

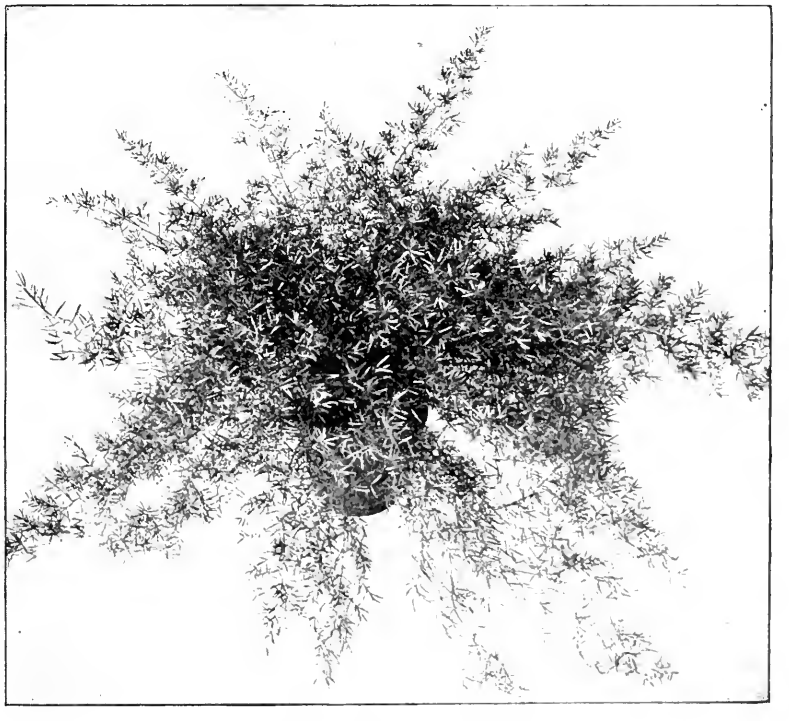
These tree-shaped vines are easily made. Set a vine to a stake stout enough to last for three or four years without rotting. Tie a strong shoot of the vine to this stake. Let the stake be three, four or five feet high, as tall as the tree-vine may be desired, and then top the vine at the height of the stake, that it may branch out to form the tree. By the time the stake rots away, the vine will sustain itself.

JOSEPH MEEHAN.

SELECTING HOUSE-PLANTS.—Occasion has been taken to caution the public not to arrange for more gardening work than can be well undertaken. By or near the time this paragraph is printed, householders may be thinking of what they will use for house-plants during the winter, and it is, therefore, appropriate to reiterate the caution, as it applies just as particularly to those who may intend merely to convert their window-sills into flower gardens. The writer has seen houses so burdened with plants that the busy occupants might be excused for not giving them all regular attention. The temperature of a dwelling is not congenial to all kinds of plants, and unless individual attention is given, these plants are likely to suffer. Injurious insects are expected visitors, and where there are very many plants to look after, these intruders are very likely to soon change a healthy plant into a sickly object. Love for plants will most frequently encourage a large collection; but for the sake of the plants, there should be a little restraint. A dozen fine-looking, vigorous plants are much preferable to three dozen of which one-half are poorly. Variety is naturally desirable, and forethought should be exercised in making a selection, varying it each season.

A POT-SCRUBBER.—Remarking the article on cleaning pots, in a recent issue of the MONTHLY, attention is called to a machine patented by Richard Lewis, Cruger's Island, N. Y., which is designed for those having a great number of pots for cleaning. A conical brush, made in several sizes, is made to revolve over a small tank. The pot is dipped in the water in tank and held to cover the brush, which must surely clean it well. A large, flat, circular brush is also attached to clean the outside. The whole thing is so arranged that it must be a very convenient and necessary machine.

ASPARAGUS SPRENGERI.—Those who know asparagus only as a garden vegetable, are surprised at the idea of its use as an ornamental plant. They have no idea of the great range of habit and other character that prevails in the genus. There are, probably, one hundred and fifty different species known in the genus, most of these are climbers or trailers, and very different from the stiff, formal habit of our garden friend. They are scattered over Europe, Asia, and Africa, and one of the most remarkable facts in botanical geography is, that for all the large number of species known, and their wide distribution over the other continents, not a single species has been found on American soil. Most of them have rigid leaves, though these may be attached to slender, graceful stems, as in the species here illustrated; but some have broad leaf-blades, as in the famous one known by florists as "smilax." This was once referred to another genus and known to the early cultivators as *Myrsiphyllum asparagoides*, but modern botanists will not have it so. They calalogue it as *Asparagus medeoloides*. The one illustrated, for which we are indebted to *The Housewife*, of New York City, is comparatively new, but has been found so useful for decorative purposes, that it has become popular much more rapidly than has been the case with other beautiful and useful introductions. It is especially valuable as a basket plant for windows and parlor conservatories.



ASPARAGUS SPRENGERI.

PEAT FOR FUEL.—A correspondent says: "Could you give any information regarding peat earth, giving directions as how to find, recognize and prepare it for use as fuel?"

A. BRIDGEMAN.

Peat for fuel is simply cut into sections like brick, and thoroughly dried in the sun, just as we dry bricks before burning.

There is no better way to ascertain the burning quality of peat than an actual test. You should cut out a few sections, dry them, and then apply fire and note the result.

As it is the result of a deposit of sand or clay on moss, or like spongy growth, carried there by inundations of water, all being thoroughly mixed and decayed, it must be searched

for in low places where these combinations are possible. Of course, there will be different qualities, according to the amount or quality of the several ingredients. Naturally, there must be sufficient fibre or clay to keep the bricks from crumbling when dried, yet not too great a proportion of the latter to keep it from burning readily.

Peat, as used in potting plants and other gardening purposes, is lighter, having less heavy soil in its make-up; but its nature is the same, and that for burning could frequently be found in its neighborhood.

Flowers in Sick Rooms.—I find very few flowers, excepting roses and violets, that have fragrance, adapted to the sick room. Aromatic flowers, like the nasturtium, are of a strengthening, welcome nature. But sweet peas, even, have too much odor. And all lilies having perfume must be discarded, even the delicate Fairy Lily has a fragrance that will be too noticeable soon. The Bermuda Lily is so penetrating that even those in health, often admiring them, banish then to the porch for the night-hours. A cluster of orange blossoms, with vivid contrast of their bright green leaves, may give one much pleasure for a little time, but the fragrance is so pronounced, distance will soon lend enchantment to the view. And the mignonette, whose freshness is so much admired in a room, often will set an invalid to sneezing.

The Lily of the Valley is so delicate, it might be added, but there are plenty of flowers that are lovely without being possessed of the added gift of fragrance.

It seems roses were given beauty and fragrance on purpose to comfort an invalid. Some one has said the rose is the queen and the lily is the king. But I think there are kings among roses as well as queens,—and princes, too.

A few well-arranged flowers, with the stems cut evenly, ready to put in a vase, are much more acceptable than a much larger number that will require some one's precious time to rearrange.

There is also compensation, when picking flowers, to have them all of the same day and generation.

Often has a large, fragrant Jacqueminot Rose, still in its prime, the delight of all beholders, been sacrificed because other roses in the same vase were dropping their petals,—like poor dog Tray paying the penalty for being in bad company.

The beloved Queen Louise, the mother of Emperor William, said: "To be contented in our inmost nature, needs not much of material things; healthy air, beautiful views, large trees, a pair of flower beds, an arbor—this is enough when my husband and children are here."

Those who study and enjoy natural objects care less and less for artificial productions. What is the brightest artificial flower to one who is delightedly watching the development of a bud on some new or rare plant?

We have many cacti from Mexico and the desert. The pink, also the white, *Echinopsis* are now in bloom and quite, if not more, dainty than any rose. Passion flowers, both the blue and pink, are also again in bloom, reminding us of the legend associated with them.

San Diego, Cal. Mrs. E. E. Orcutt.

Dufferin Island, Niagara Falls.—The former owner of the now famous Dufferin Island, at Niagara Falls, owned—and his heirs still own—a beautiful estate comprising several hundred acres, with a stone mansion built right on the edge of the high bluff above the islands, containing Mr. Street's library and most of the grand old furniture just as he left it. These may soon pass away, but the trees that he planted will remain living monuments for years to come. These are grand old maples, elms, catalpas, crabs, hedges of wild plum, a large odd-shaped bed of roses—that must have been glorious in its day; a fine *Calycanthus*, of which the old keeper seemed very anxious to obtain the name, a Kilmarnock Willow of unusual size—28 inches in circumference, with an immense top. But the finest of all are the Norway Spruce; of these, there are quite a lot, set out in regular rows on the lawn about thirty feet apart apparently, 20 years' old. These are simply *perfect specimens*. The yearly growths have been short but very regular, and they have never been trimmed. There is also one specimen, estimated to be about 50 years old, of singular, picturesque beauty, the long branches standing out horizontally, *thickly* clothed with fine short branchlets hanging perpendicular from the large ones with few,

and, in some cases without any, other branches. One of the large branches measured 29 feet, 7 inches, and the trunk measured 7 feet 5 inches in circumference about 60 feet high.

There is no coal gas to destroy these trees nor has the knife interfered with their natural growth, hence their charming grace and elegance.

Few visitors find this charming retreat, as it is entirely hid from view by a dense natural growth of trees and shrubs, but there is a good terraced walk on the north bank, as well as steps and walk on the eastern bank of the estate.

Buffalo, August 8, 1898. CHAS. D. ZIMMERMAN.

CHOICE HIBISCUS VARIETIES. — Without Althæas,—by which name the shrubby *Hibiscus Syriacus* varieties are commonly known,—gardens would be practically bare of flowers in late July and August, not taking into consideration herbaceous perrennials, and the indispensable hydrangea, which may not always be suitable where the larger shrub would.

But there are althæas and althæaes,—a fact which few planters consider. While very few could be pronounced really undesirable, some are highly preferable if only a small collection is wanted, and it is the object of this article to enumerate only a few of the best.

Anemonæflora is a large-flowered variety, with distinctions that mark it as one of the best. The flowers are double, the stamen-petals making a tufted centre much shorter than the true petals. These latter are broad and conspicuous; deep scarlet at base, distinctly extending into veins to almost the edges of the petals. The general color of petals is a beautiful dark *pink*. An important character is its late-booming. In the vicinity of Philadelphia, the wood is partly killed back the first year or two, but its excellency makes this unworthy of great consideration.

Camelliæflora is just as desirable as the preceeding variety, by its distinction in color. The large white flowers are handsome and showy, the broad, true petals, extending much beyond the inner stamen—petals. The rich crimson eye, which occurs in almost all varieties, is by contrast very marked in this one.

Carnation-striped, has red stripes on pure white petals. The flowers are full double, and of medium size.

Comte de Flandre, though the flowers are not large as the preceeding, is worthy of mention for the dark rose color.

Enchantress is practically unknown to the public, not having been yet disseminated. Its flowers are single white, with the usual crimson eye and a dash of rose tipping each petal. The appearance of this color, regularly located on the petals, is unique and pleasing. It is fully expected to receive great favor when introduced.

Pæoniæflora at its best produces a magnificent, large flower, resembling a *Pæonia* on a small scale. The inner petals are nicely arranged, filling out the whole flower, and not loose or cramped as in others. In color, they are a fine, clear pink, occasionally light.

Totus-albus produces paper-white, single flowers. The crimson eye is absent.

Variegated-leaved (double-flower). As a flowering variety, this variegated one should not be included in this list, though it does flower. The flowers remain in the bud unopened, just showing the tips of dark red petals. These buttons are somewhat ornamental, surrounded by abundant foliage; but the leaves are most important, the variegation being a good yellow and green.

Many others might be named, including single purple and single pink, but it is not intended that this list shall be a large one, and they are therefore omitted. The assortment at command and their great utility call for a deeper investigation by those interested.

WATERING PALMS.—When should a palm be afforded water? is with gardeners and amateurs an all-important query; and so far we have never seemed to have the right answer, because there have been mainly guesses at the reasons that should govern the application. Dr. Dammor says "by the turgidity of the leaves and stem, which can readily be ascertained by the inability of the tips to be bent easily around the finger." If a plant be dry, the tips can be coiled round the finger with ease. The whole matter is made clear to the least botanically-instructed reader by a description of the construction of the stem and the leaves. A little wilting does no harm. Warm water should always be used for palms kept in rooms and hothouses—as warm indeed as 68° Fahr.

RAISING POLYANTHA ROSES FROM SEED.—A correspondent asks how and when the new Polyantha Roses are to be sown? He also wishes to know how to flower them in six weeks from sowing? These are very pretty little flowers, cheap, and easily raised, and as they have been much advertised, we give a short article upon their culture. To flower them in six weeks is not so easy. It would need rapid growth and careful treatment. Even then the seedlings would only be 4 inches to 6 inches high. We have seen several batches in bloom two months after sowing, but they are more often three months. We would recommend a more steady treatment.

Sow as soon as possible, using a pan or box filled with a compost of leaf-soil, with a little extra sand and light loam. Only just cover the seeds and stand the pan upon a warm hot-bed or a warm part of the greenhouse, keeping a sheet of glass over all as an additional inducement towards quick germination, also to keep away insect foes. When 2 inches high, lift them out very carefully and repot into the same compost. Place three plants around the edge of a 5-inch pot and take great care not to injure the roots. Sow the seeds very thinly, and if they have germinated fairly even, turn them out of the pan entirely. This will allow of your removing them from the light compost without harming their tender roots. Any greenhouse temperature will suit them. The strongest plants, placed singly into quite tiny pots, soon form interesting and novel little plants for the dinner-table and window. The largest we have seen was about 8 inches high and as far through. As an edging to flower borders they can take the place of *Lobelia*, but will never be so showy. If left in a pan as sown, they grow more quickly, but are not so even and novel in appearance as when in tiny pots.—*Gardening Illustrated.*

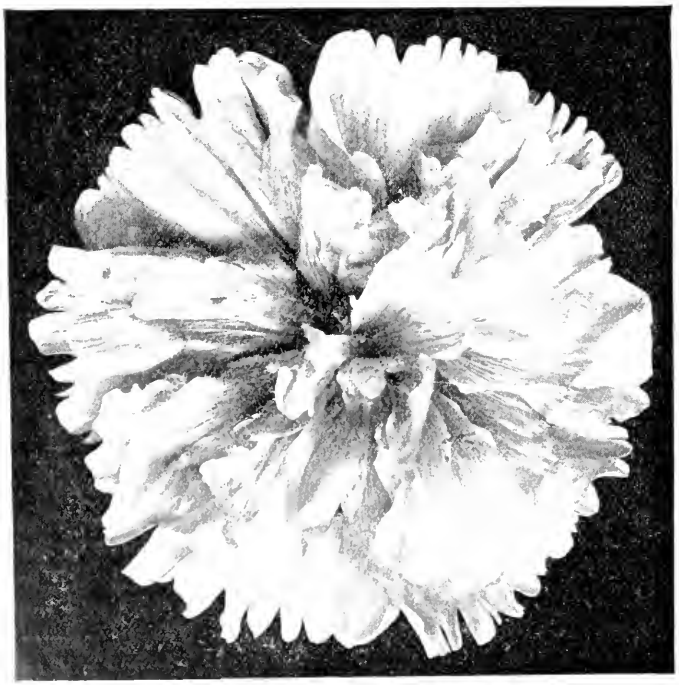
WINTERING POTTED EVERGREENS.—The following questions come from a New York correspondent who has a few Golden Retinisporas in pots for summer decoration:

"Kindly tell me how to proceed in wintering my little evergreens that are kept in terra-cotta pots? Would the pots likely burst if exposed? I am afraid they would not live if placed in the cellar. Would they stand transplanting to the garden each winter?"

They could neither be wintered in a darkened cellar nor the pots exposed without danger of bursting. Could the pots be plunged in dry soil, covering their rims, and a thick strawy mulch added, there would be a chance of the pots surviving ordinary winters.

To preserve both pots and plants, it will be best to set the latter in the garden, mulching them well. Early fall, while the ground is yet warm, would be the best time to move them. So-called water-proof pots are manufactured and sold, and would doubtless be an excellent thing to preserve the balls over winter while in the ground.

In reference to the bursting of pots during exposure to winter weather, it is only necessary to remember that water, frozen, is expanded about one-fifteenth. As the soil in the pot is sure to contain more or less moisture, this expansion must either be



ALLEGHENY HOLLYHOCK.—SEE PAGE 157.—Size reduced.

accommodated or the pot must give way.

Poorly-made pots, where they have not been well pressed, will be flaked or chipped by the expansion caused by frozen moisture which the porous pots have taken up.

FLOWERING OF THE ETHIOPIAN CALLA (RICHARDIA) IN WINTER.—In order to obtain flowers from this plant in winter, it is necessary in summer to put them in the open air, forcing a rest by not watering, and protecting them from rain. In August, the ball which is completely dried in the pot, is taken out, the dead parts cut off and the bulb planted in fresh, sandy soil, which has been well dried; the pot must be put in the sunshine, abundantly watered, and left out-doors as long as possible. It will flower soon after it is taken in.

—Translated From *La Semaine Horticole.*

By SARAH D. LANNING.

ANTHURIUMS. — Included in the genus *Anthurium*, are some very useful stove plants, both foliage and flowering. The month of February is about the best time to repot, as the roots are then coming into activity again. Specimens that have become long and lanky should have their tops taken off, and then be put into smaller pots. The old stems may also be potted up, which if kept moist, will soon make new breaks. The compost I have found to suit them best, is one-half good, clean sphagnum moss, the other half charcoal and fibrous peat in equal quantities. The best six species are *Andræanum*, *cristallinum*, *Ferrierense* (x), *Scheryerianum*, *Veitchii* and *Warocqueanum*. The temperature, in winter, should not fall under 60 degrees; and in summer, plenty of heat, moisture and shade will make them grow like weeds.

Wynnewood, Pa. JNO. THATCHER.

DISEASE IN JAPANESE LILIES.—The disease, in the Japanese Lilies imported from Bermuda, known as the Harris variety, has been traced to the ravages of a minute fungus named *Rhizopus necans*. As in the higher orders of plants, these lower classes propagate in two ways,—by spores which are the analogues of seeds in the higher plants; and by masses of the plant itself, called sclerotia, which are the analogues of the root-buds in herbaceous plants. The higher plants can be easily killed by fumigation with sulphur, or spraying with sulphur compounds, as copperas; but neither seeds nor spores can be destroyed in this way. But when the little spores begin to develop to plants, they can be easily destroyed. The way to overcome the disease is to carefully tend a few plants with the sulphates during the growing season, and from these to raise a new crop of healthy roots. The florist, who would put this scientific suggestion to practical work, would reap a financial harvest.

SPONTANEOUS COMBUSTION OF HAY.—This is explained, by M. Cahn, of Breslau, as through the augmentation of heat which is produced under the influence of the vegetation of a parasitic mushroom, *Aspergillus fumigatus*, already cited as injurious to the germination of barley by interference with natural heat conditions. The temperature produced by this mushroom may attain 60° C., at this rate combustion of hay becomes almost inevitable. —*La Semaine Horticole.*

A singular fact in connection with this subject is that, if a mass of common pine tree shavings be watered with a solution of glue, it will evolve heat to as great a degree as hay or straw. The glutinous matter in the hay is probably the material that feeds the ferment fungus.

TRANSPLANTING BEECH TREES.—The writer met with many beech trees, during the past summer, showing bad effects of transplanting. They were all moved in the spring in good time and under favorable circumstances, and ranged from small plants, four or five feet in height, to immense, fine specimens, the branches covering a diameter of perhaps fifteen feet. It was clearly evident that the pruning-knives had been insufficiently used. With great care and attention, many plants may be moved without much pruning, but not so with the beech. Experience with this plant leads many to cut the branches into almost a pole. As a rule, beeches have an abundance of branches, and it would doubtless be better to prune out all of the weaker ones, and shorten in the others about one-half. The same end will thus be gained, while leaving the trees with better appearance and without the necessity of sending out buds from old wood—a difficult thing for almost any tree.

NEW OR RARE PLANTS.

NEW HARDY EVERGREEN ROSES.—The accompanying illustration of Gardenia Rose is one of the new type recently noticed in MEEHANS' MONTHLY and is reproduced by courtesy of the originator of the roses, Mr W. A. Manda.

Among several illustrations, this of Gardenia was selected as best showing traces of the male parent, Perle des Jardins. It is often difficult to portray the individuality of certain varieties of popnlar flowers; but in this case, the softness of the petals shows the parentage from the Perle.

With the glossy, evergreen foliage, abundant bloom, and spreading growth, all characteristic of the seed-parent, *Rosa Wichuraiana*, these roses ought to prove popular.

Evergreen Gem is the result of a cross with Mme Hoste; Jersey Beauty and Gardonæflora are also of Perle.

NEW HARDY EVERGREEN ROSES

THE HARDY FLOWER GARDEN.

ALLEGHENY HOLLYHOCKS.—Some time ago, an illustration of four Allegheny Hollyhock flowers appeared in MEEHANS' MONTHLY. Only an imperfect idea could be obtained from such a plate, but it was used as being the best to be had at that time. It has ever since been the conductor's desire to present a better illustration, and in this they have been successful, as note on page 154. But yet they are not satisfied,—in fact, it is almost impossible to show what is best seen in nature.

There is more in this new strain of hollyhocks than has yet developed. The most notable departure from the ordinary type is in the grace of the petals. The regular, solid, rosette-like shape of the old flowers is in a measure pretty and neat, and very desirable; but it becomes monotonous. Allegheny petals are more loosely arranged, not very double, as a rule, and gracefully fringed.

Another prominent feature is the size of the flowers; they range in various sizes from four to seven inches.

They are also remarkable for a free, blooming character, tall spikes being produced that frequently give bloom until frost. Seedling plants grow vigorously and occasionaly bloom perfectly the first season:

The colors are various, from very light pink —"shell-pink," as it is called—to a brick red.

LILIES FOR SHRUBBERIES.—To avoid monotony in landscape gardening, the designer must carefully prepare for certain features that will be attractions at different periods, or in various parts of the grounds. The opportunity for such efforts is presented with great force in planting groups of shrubbery. It is difficult to make any large selection of flowering shrubs to cover the entire summer by their blooming periods. Here, the advantage of having abundant material among herbaceous plants, perrennial and annual, is apparent. There is always something blooming among them. In comparison with shrubs, they occupy very little room, and can be placed in natural spaces without interfering with the large plants.

Among the most interesting plants for such purposes, are lilies. The present chief enjoyment of them is as they are flowered for Easter decorations, yet they are just as interesting in our gardens.

The White Lily—*Lilium candidum*, and the Tiger Lily—*L. tigrinum*, are perhaps most common in gardens, though all are now being more generally planted. Those from Japan are chiefly sought, and include *L. auratum* (Golden-band Lily), *L. speciosum* and *L. tigrinum*. Because of the huge flower, *auratum* might be considered the most showy, white being the predominating color, otherwise the flower is not as handsome as a vigorous Tiger. Doubtless, the forced flowers are better colored than those grown in the full sun-light.

L. speciosum has handsome flowers, beautifully shaded with pink, and should always be considered in selections. The flowers of *candidum* are small, white and early, of a different type from the others mentioned, and produced abundantly. For utility, *tigrinum* is possibly best, producing from ten to twenty orange-red flowers on one stalk,—and especially where the soil is cool and moist, yet it is being pushed aside for others more widely advertised. *L. tigrinum splendens* is supposed to produce larger and showier flowers.

While Japan is getting credit for such fine flowers, let not our native species be overlooked. *L. superbum* makes large growth and produces flowers of the best color, but *L. Canadense* has smaller, yellowish flowers, produced usually in abundance.

Lilium elegans is a little-known species from Japan, which promises to be popular. *L. longiflorum*, of which the Harris Easter Lily is a variety, is valuable for the peculiar long, showy tubular flower.

Being bulbs, the planting can take place after the beds have been otherwise planted and when the effect can be better foretold. Planted deep, from nine to twelve inches, in rich soil, but light at least around the bulb, they will all prove hardy and thrive.

GERANIUM MACULATUM —I am pleased to see the note in a recent number of MEEHANS' MONTHLY regarding the value of *Geranium maculatum* in cultivation. For some years, I have grown it in my wild flower garden, the only care necessary being a generous pruning and trimming down to its rightful limits after the blooming season. For, like the common blue

violet, it soon encroaches upon its neighbors unless somewhat restrained,—though never to the extent entitling it to be ranked among weeds. Like many other native plants, it increases in size and luxuriance with cultivation. BESSIE L. PUTNAM.

Harmonsburg.

FRUITS AND VEGETABLES.

STRAWBERRY, THE GLADSTONE.—The Gladstone Strawberry, is a variety that has appeared in the garden of Mr. F. F. Merceron, Catawissa, Pa. It was Mr. Merceron who first gave prominence to the Sharpless, which originated in the same locality. He is a good judge of the value of a new fruit.

BARTLETT PEARS FOR THE OLD WORLD.—It is said that experiments made by Californians, of shipping Bartlett Pears to England, has proved entirely successful and profitable. They reach that country long before the same variety comes into use in that part of the world. It is known there as the William's Bonchretien, and sometimes simply as the William's Pear.

STRAWBERRY NOTES.—We are now preparing our strawberry bed for another season. Our plan is to dig in an extra coating of barnyard manure, the ground having been well manured when subsoiled the fall or spring previous. A crop of any early vegetable has already been taken off the ground.

The plants are set in rows two feet apart and the plants twelve inches apart in the row. We fruit two seasons; the second year allowing all runners to remain between the plants so as to make close rows, still keeping those cut off between the rows to allow cultivation.

We find Marshall the best variety for four reasons: it has color, size, flavor and is a good yielder, and these combined make it undoubtedly the best for home use. It is probably too soft a berry to stand shipping to market. Brandywine, we find very good, coming in a little later than Marshall, and, though not quite up to the former for flavor, still it is what may be termed a good serviceable sort.

Mary, which we have tried this season, is too tart to be grown for table use, so we shall discard it.

Glen Mary is a large yielder, and, so far, has given us a favorable impression of Michels' early, we grow a few for earliest use.

Other sorts, we have discarded, as three or four varieties we consider enough for general purposes for home use.

Greenwich, Conn. JOHN W. DUNCAN.

THE GRAVENSTEIN APPLE.—Of the Gravenstein Apple, it is said, by authorities, that it needs, to perfect its unsurpassed flavor, the salt air or winds of the sea coast. For this reason, the Gravensteins grown in the Baltic provinces are the most sought after in the markets. Should not this also be the reason that Connecticut peaches, while raised under the same climatic conditions, are of such pronounced superiority over those of more inland States? MRS. S. in *Hartford Times*.

FRUIT CULTURE IN BOISE VALLEY.—Boise Valley, though in Idaho, is, in its cultural and other relations, an outgrowth of Utah, and is a sharer in the wonderful prosperity that has followed this settlement at Salt Lake. The Salt Lake City *Tribune* says of this Valley:

"Success in growing fruit in Idaho's fruit belt is limited only by inferiority of intelligence and lack of willingness to work on the part of the grower. Good winter apples always pay handsome profits. Pears do equally well; and our prunes, when dried, are as good as gold. Sometimes, when the prunes are shipped in the green state and the market is glutted, the profits are smaller; but prunes are grown to be dried, especially in Idaho, as the amount of saccharine matter in our prunes, compared with those produced in our sister States, is truly wonderful.

"The average yield of a good prune tree, five or six years old, is about 200 pounds, though a single tree has been known to produce as much as 915 pounds of prunes. The average yield of our apple trees is harder to determine. For a good, sound tree of about ten years it might be placed at about 500 pounds, while the maximum yield reached fully 2000 pounds. As to varieties, the Winesap, the Ben Davis and the Rome Beauty seem to be the most profitable, both on account of a good average yield and a ready demand for the same in market; though some other varieties might do equally well, when once introduced."

BIOGRAPHY AND LITERATURE.

LIFE'S AUTUMN.

A fitful wind about the eaves,
That sways the creaking door;
The shadows of the falling leaves
Flit pass me on the floor.

The autumn skies are clear above,
But silent is their song;
Oh, spirit of the changeless love,
Keep back my autumn long!

In vain with gold the forest weaves
Its sylvan greenness o'er;
The shadows of the falling leaves
Flit pass me on the floor!

It means the world is growing old,
It means no birds to sing;
Oh, not for all the autumn's gold
Would I forego my spring!

—*Macmillan's Magazine.*

GEO. W. CAMPBELL.—Mr. Geo. W. Campbell died at Delaware, Ohio, on July 15, in his 82d year. He was the editor of a local newspaper, but, early in life, became warmly interested in horticulture. He was one of the pioneers in the great eminence American grape culture attained during the last half century. He will be best remembered by his introduction of the Delaware grape, which still holds a place in the front rank of fine table grapes.

STEPHEN LINCOLN GOODALE.—A memorial address, on Stephen Lincoln Goodale, one of the fathers of Maine agriculture, by Samuel L. Boardman, has just been issued. Horticulturists, as well as agriculturists, will hold his memory in grateful remembrance. The superb Goodale Pear was the result of one of his experiments. It was raised from the McLaughlin. He died at Saco, Maine, Nov. 8th, 1898, in his 82d year. Prof. Geo. Lincoln Goodale, Director of the Cambridge Botanic Garden, is one of his sons.

ISIDOR BUSH.—The death of Isidor Bush, which occurred on the 5th of August, removes another of the intelligent men who have elevated horticulture, of which the present year, 1898, has given us so large a list. He died at St. Louis, of which he had been a citizen for 49 years. He was a co-worker with Dr. Engelmann, and together they made the "catalogue of grapes" on the Bushberg nurseries, a marvel of botanical research and practical usefulness.

It has gone through two editions, and has been translated into several European languages. He was preparing a third, which had been called for and which his death may prevent. It was mainly through his knowledge that Europe became acquainted with what are known as non-resistant grapes,—a useful discovery that saved the great wine interests of the Old World from utter destruction.

He was born at Prague, Bohemia, in 1822. Taking part in the revolution of 1848, he came to America. During the Civil War, he was Secretary to General Fremont, and in 1865 was a member of the State Convention of Missouri. He leaves one son, Raphael, now at Bushberg. Few have departed from the horticultural circle who were so widely useful, or so universally beloved.

ALBANUS L. FELTEN.—Albanus L. Felten, a noted market gardener, of Philadelphia, died on the 19th of August, in his 84th year. In a great measure, he was the father of profitable raspberry culture in America. Up to his time, varieties of the European race were experimented with, and the newer popular varieties, such as Herstine, Brinkles Orange, and others of the Antwerp, the names of which are familiar to the older generation, were as far as improvers could go. They were too tender for our winters, and the fruit too soft for profitable marketing.

The Philadelphia, and Felten's prolific, improved American varieties, changed the whole course of Pomological thought. To-day, only varieties of American species are found in the raspberry markets. He was also an improver in strawberry growing; and, indeed, in the whole range of market gardening, he was famous for the intelligence he brought to bear on his business. The wonderful pro-

gress made in market gardening, and from which the whole community profits, owes much to Albanus L. Felten of Philadelphia.

GILLENIA.—CHANGES IN PLANT NAMES.—F. B., Peoria, Illinois, says: Your article on *Gillenia trifoliata* needs some correction. Arnold Gille, to whom Moench dedicated the plant in question, was a gardener in Kassel, who published, 1627, a list of foreign plants cultivated in Kassel—Hortus cassellanus. The name should not be pronounced Jilenia, as the Century Dictionary proposes, but Gillenia, as the German G sounds like the English G in give. Conrad Moench was professor of botany not somewhere "in Hesse Cassel," but Marburg, Hesse Cassel, one of the oldest universities in Germany, founded in 1527. Marburg in Austria, (prov. Styria) has nothing to do with the professor of botany, Conrad Möneh (1744-1805). Linnaeus proposed that only the names of the most meritorious botanists should be used as generical names, and I think that is right. Now, although I do not hold that the obscure gardener Gille is one of the meritorious botanists, a name now in use since a century should not be cancelled only to give our botanists a chance to mutual complimenting. You are right, Gillenia will probably prevail for our plant."

And J. H. Stanfordville, Dutches County, N. Y., says: "I am pleased that you gave Dr. Britton a rap on *Gillenia*. We might have as many names for each plant as there are presuming persons who imagine that there is some value in their innovations."

The author of the chapter on *Gillenia* desires to say that as a director of public schools of 20 years' standing, he has long ago abandoned the practice of "rapping" anybody—much less would he "rap" his excellent friend Dr. Britton. Dr. Britton and his friends were confronted with a grave problem. They found a canon for botanists to follow in the use of names, that had not been followed,—namely, that the first name given with a description, should prevail. They determined to enforce this rule at any cost, just as martyrs have died in the past for their faith, and as the dervishes in Egypt are doing to-day. Though we feel that Dr. Britton and his friends are attempting an impossibility, we must admire the heroic attempt. They cannot see, as martyrs in many instances fail to see, that the evils following their train, are greater than the ones they try to cure. The fact is, those who helped to found the original Canon, that priority should prevail, failed to provide for what should be done when it did not prevail. One thing is clear to the writer of this, that after a name has once become established, and diffused through general literature, no effort will succeed in replacing it by a prior name.

A BOOK RELATIVE TO CHEMICAL INFLUENCE ON THE COLORS OF FLOWERS.—A correspondent inquires: "Can you refer me to any published matter relating to the influence of the varying constituents of the soil on the colors of flowers, or any experiments in the application of any chemical substance with a view to influencing the color of flowers; or any experiments on the influence on flower-colors of lights varying in intensity or character?"

We do not know of any such work or paper. MEEHANS' MONTHLY is unable to recommend anything to meet this request. Can its readers give the desired information?

GENERAL NOTES.

ABIES DOUGLASII.—California pines, as well as evergreens generally, feel quite at home in the moist climate of Great Britain. In Devonshire, England, a specimen of the Douglas Spruce is growing that has already attained a height of 80 feet, and is 12 feet in diameter. At Dropmore there is a specimen 120 feet high,—though in other respects less handsome than the Devonshire specimen, says the London *Journal of Horticulture*.

BELGIAN ESTIMATION OF GARDENING.—In most countries it is the military hero that gains popular applause. Those who destroy life secure the bronze or marble monuments,—those who add to the pleasures of mankind are seldom recognized. Belgium is an exception. Its great men receive public decorations which come to kings and conquerers only, elsewhere. Van Houtte, Linden, Verschaffelt, De Smet, Van Gert, Baumann, Roezl, Wallis, Warcewicz, and other great friends of horticulture, received almost royal honors when living, and monuments when dead. Why should not other communities appreciate the heroes of life, as well as the champions of death?

MIMULUS CARDINALIS.

CARDINAL MONKEY-FLOWER.

NATURAL ORDER, SCROPHULARIACEÆ.

MIMULUS CARDINALIS, Douglas.—Villous, with viscid hairs; leaves ovate and the upper often connate, the lower commonly obovate-lanceolate, all erosely dentate; corolla scarlet, with tube hardly exceeding the calyx; the limb remarkably oblique, the upper lip nearly erect with the lobes turned back, the lower reflexed; stamens projecting.—Brewer and Watson's *Botany of the California Geological Survey*. See also Gray's *Synoptical Flora of North America*.

The natural order, *Scrophulariaceæ*, to which the genus *Mimulus* belongs, is largely represented among the native flowers of the United States, there being no less than thirty-eight genera included in Dr. Asa Gray's "Synoptical Flora." Many of the genera are, however, illustrated by but few species. A few, like this, with *Pentstemon*, constitute the greater part of the order in North America,—these two alone comprising about one-third of the whole—of *Mimulus*, about fifty species. Of these, two only—and these scarcely admitted into the genus—are all that find a home in the Atlantic States. As the botanist extends his search westwardly, he finds about eight in the Rocky Mountain region. All the rest are found mainly along the line of the country washed by the Pacific Ocean. In this territory, they occur over a very extended range northwardly and southwardly, reaching, indeed, the Arctic Circle. It has been noted that there is a remarkable correspondence between the flora of the Atlantic portion of the United States and that of Japan,—rarely any close relationship between the species of the Pacific Coast and Asia; but, in this instance, a species, *M. Nepalensis* of Bentham, is found in Japan, not distantly removed from the well-known musk-plant, *Mimulus moschatus*, which is found throughout the Pacific mountain range. On the other hand, though the two Eastern species, sometimes referred to as *Lindernia*, are very nearly reproduced in Japan by an allied genus, *Mazus*, which, with but a single species there, *M. rugosus*, was known to Thunberg as *Lindernia Japonica*.

In the first series of the Native Flowers and Ferns of the United States, Vol. II., p. 73, the history of the name *Mimulus* is given under the illustration of a Rocky Mountain species, *M. Jamesii*. This has small, yellow flowers which is the prevailing color in the genus; though red, orange, violet and rose are represented in various species. The "Monkey-Flower" of the florists was originally yellow,—*Mimulus luteus*,—but having a natural tendency to vary, the varieties produced by selection under the florists' hands have been very numerous,—not only in form, but in many shades of color between yellow, crimson and brown; none, however, with any tendency to encroach on the beautiful cardinal color presented by *Mimulus cardinalis*, here illustrated.

Florists usually have the credit of producing the garden forms of flowers which are so common, but they do little more than take advantage of a tendency to vary, which they find in the plants themselves. This is illustrated in this species. It has been under the hands of the florist since 1835, but only a few slight varieties of it have been recorded. It has no tendency to vary, as some of the others have.

According to one authority, it is commonly known as the Cardinal Monkey-Flower. Common names are sometimes misleading, and this may be confused with one referred to by Gilder in the lines:

"When fades the cardinal flower, whose heart-red bloom
Glows like a living coal upon the green of the mid-summer meadows,"

for it is supposed the "Cardinal Flower" here intended is the *Lobelia cardinalis*, though it is not in bloom till long after the "mid-summer meadows" have had the mowing machine pass over them. But "Monkey-Flower" has been adopted as a derivative of its Linnæan name, *Mimulus*, which was suggested by the ape-like faces of painted clowns in circuses, which the flowers of some kinds present; and "Cardinal Monkey-flower"

follows from the cardinal color. Cardinal color came to be the term for light scarlet, from robes of that color being the special prerogatives of the Cardinals, high dignitaries of the Roman Catholic Church, from among whom and by whom the Popes are chosen.

The peculiar bright color, hitherto unknown in the genus, created quite a sensation when introduced into cultivation for the first time, which resulted from the journey of David Douglas, who was employed to go to the Pacific Coast, in 1832 (a second trip), to collect seeds of plants, under the auspices of the English Royal Horticultural Society, for the gardens of the Old World. He suggested the name, *Mimulus cardinalis*, which was adopted by Bentham, who drew the first published description. Douglas, however, did not live to participate in the pleasure derived by the admirers of beautiful flowers from the seeds he sent home, having been trodden to death in the Sandwich Islands, in 1834, by a wild bull in a pit into which both had fallen soon after each other.

Almost all of the family love to grow in damp places,—or if on stronger rocky ground, in the vicinity of waterfalls, or in locations where the atmosphere is saturated with moisture. This species grows along the banks of streams and water-courses, often in large masses of three—or even four feet in height, and making a gorgeous display in the rural scenery. As seen in the annexed illustration, the flowers come singly from the axils of the leaves, borne on short pedicels, which bear them beyond the foliage, and these are produced continually as the flower stem grows. They may thus be found in blossom at any time, from midsummer till autumn has fairly set in. Its native home covers a wide range on the Pacific Coast, it being credited not only to Oregon and California, but to Arizona also.

A specially interesting feature of the study of the living flower is the sensitiveness of the flat lobes of the stigma. This was made the subject of an interesting chapter in the American Agriculturist for 1878, from the pen of the late Professor George Thurber, and copied entire into the London *Garden* for 1879. It may be noted that in many plants of the order to which *Mimulus* belongs,—*Scrophulariaceæ*, and an allied natural order *Bignoniaceæ*,—some genera have the stigma composed of two flattened plates. These plates are usually closed; (Fig. 2, where they are commencing to expand) but when the flower is fully open, they spread and continue expanded until the flower has faded (Fig. 5). If, however, they are a little roughly touched, either during the visit of an insect, or by the point of a pencil, they slowly—not "suddenly," as the accounts cited say—close. What "motive," so to speak, the flower can have in exhibiting such an excitable disposition, has been a subject of much speculation among students of botanical philosophy. Usually, in the modern discussions on these subjects, it has become the custom to regard it as being in some way connected with arrangements for avoiding self-fertilization. As will be seen in Fig. 4, the anthers discharge their pollen before the pistil is mature. If the plates, with their interior stigmatic surfaces, were expanded at that time, they would become covered with the flower's own pollen. But the pistil elongates, subsequently, to the discharge of the pollen (Figs. 3, 4), and not till then do the lobes expand. Any visiting insect, covered with pollen of other flowers, may then communicate some of this pollen to the plates. This may be a legitimate speculation to account for the closing of the plates at the time when the stamens mature and shed their pollen; but the subsequent pollination, by insects or other agencies, appears to be in no way aided by the irritability. The plates expand again, subsequently, and remain expanded unless again intruded on, until the flower fades (Fig. 5).

The whole plant, and especially the stem, is covered by hair having a viscid exudation at the apex or, as the description states, covered with viscid hairs. Here, again, philosophic speculation may be indulged in, while a large number of the species of the genus are clothed with these sticky hairs, nearly as many are perfectly smooth. What gain to the plant is associated with this kind of hairy investiture, may be a question. Adaptation to environment can scarcely have caused the difference, as among the twenty-seven species native to the Pacific Slope, smooth and hairy species often grow together.

EXPLANATION OF THE PLATE.—1. Upper portion of a flowering stem. 2. Flower mature with lobes of the pistil ready to expand. 3. Back view of flower, a little younger. 4. Front view showing mature anthers. 5. Faded flower, showing expanded lobes of the pistil.

WILD FLOWERS AND NATURE.

MOUNTAIN WOOD.

Unconscious nature with voice subdued,
Soothes the soul with its various tones—
The muffled roar of the wintry wood;
  Or the sigh of the pines, where the south wind moans,
Or here, where the spray of the foam-cascade—
  Keeps green forever the moss-robed walls,
Whose ferns and vines are an emerald braid,
  Amid the murmur of waterfalls.

—HOWARD WORCESTER GILBERT.

TUCKAHOE,—PACHYMA COCOS, AGAIN.—Seeing an article in the September MONTHLY, the thought struck me that perhaps I could add a few words of interest concerning the growth of the Tuckahoe.

Having been much interested in it for the past ten years, and examining hundreds of specimens, taken from the soil by myself, I have learned something of its curious habits. It was only about two years ago that I learned the secret of their existence and became convinced that they had no roots of their own. I had found numerous ones that appeared to be formed around roots of trees, (as Fig. 2), but there was no trace of the woody fibre.

While digging in our garden, one day, in Arkansas, I found a specimen about two feet long and as large as my arm. I carefully dug it out, as I was then collecting some for the Agricultural Department. It was growing on a black hickory root that was so near decayed as to be very brittle, and it broke in two. (Fig. 1).

The fungus was yet in its infancy and was quite hard and watery and of a light, silvery-gray color instead of a pearly whiteness, as the mature specimens are.

The root itself was about one-and-a-half inches in diameter, and, slicing it open, I found that where the fungus was largest, (3-4 inches in diameter), there was not a vestige of wood to be seen, while nearer the ends, the chestnut brown particles of wood became visible, surrounded by grey masses of fungus; and finally, the wood was predominant and all traces of the fungus lost. In other words the fungus had not yet extended along the entire root.

It spread both ways from the point of attack and occupied about two feet of the root.

Its spores seem to penetrate every pore of the wood and as they grow and swell, separate it into small particles.

Although I have found the Tuckahoe in all stages of its growth, I have never seen one with any trace of roots of its own, and I seldom found one that did not bear conclusive evidence that it had formed in or on some tree root.

So far as I have been able to determine, it confines itself to roots of the hickory.

It doubtless requires a considerable length of time for this fungus to come to maturity,—perhaps all the season, and as specimens are found in a perfect state of preservation, at all seasons of the year, I am inclined to think they may last longer; and as the roots are not affected until in an advanced stage of decay, it is quite possible that small roots, to which it

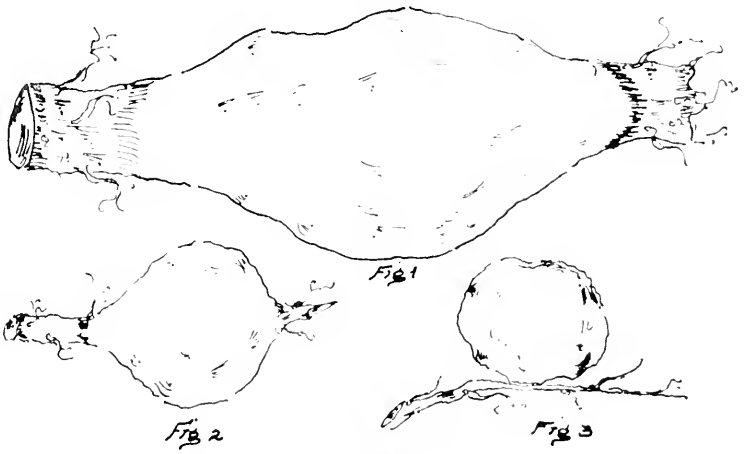


FIG. 3.--START ON A DEAD ROOT.

often attaches itself, have become wholly obliterated when the mushroom is found. This will account for their being, as you say, "sometimes wholly disconnected with the roots of trees." C. E. PLEAS.

Chipley, Fla.

Though the subject has been so well discussed, we find a place for this excellent communication. As before said, the fungus does not appear to be a parasite, but finds on the decaying wood, and sometimes independently of any decaying wood, the fungus with which it proposes to be mutually helpful in getting a start in life.

TUCKAHOE. — The article, "Tuckahoe," mentioned in the MONTHLY for September, reminds me of my own native place, Central North Carolina. My father, in cleaning up an old fence-row, got hold of a vine—dead of course—a little difficult to remove. He found, at the lower end, it was still adhereing to something, and upon further investigation, found it fast to a bulb, nut, tuber, or whatever you will call it—potato shaped, but very large and irregular; of a brownish, rugose coat. We dug it up entire, and it was as large as a man's soft hat. We cut a piece off, and it was as white as milk on the inside and had a sweetish, starchy taste. We took it to the house and put it, after it was washed, on the lower shelf in the cupboard, where it soon dried and was very hard. We frequently cut off pieces and ate them, and the taste was like arrow-root. It finally dried and cracked in many places, and still we would break off pieces and eat them, until finally it became so hard we had to take a hammer or little axe to get off pieces. An old man came to our house, one day, and we showed him the thing. He at once pronounced it Indian bread, and said that many years ago, there were quantities of it in North Carolina. My father told me (I was a boy then), that it was the root of a large Convolvulus, and I did not dispute it. Since that time, I saw some tubers—larger than that one—in Mexico, but the vine bore large, bright-red-purplish glories. This tuber—if that is what you will call it—certainly had starch in it. I have one of the tubers now in a tub, at south side of my house. The vine, this very morning, had over 100 fine, large, red-purplish flowers upon it. I have to take it up (tub sunk in ground) every fall and put it in cellar. The bulb or tuber increases in size every year. I think it will now weigh twenty pounds. The point where the vine is attached to the tuber is very small,—not so large as the handle of the pen I am writing this with,—and I should think, if it was to be severed, it might be hard to find where it was attached. The vine grows up every year, and it is no larger at the point of attachment, than it is six feet from it.

We have found truffles here, and I think they do grow and have a fine vine of some kind, which wholly separates from the tuber, which grows with but little foliage.

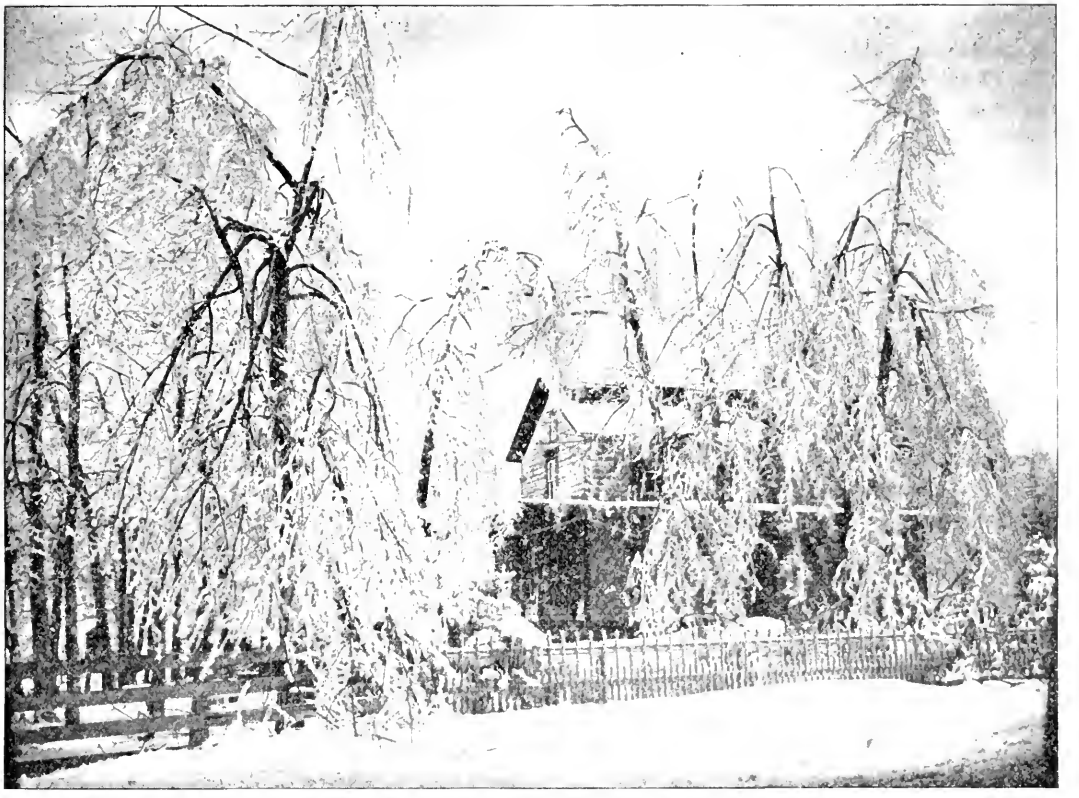
R. J. MENDENHALL.

A valuable discovery of recent years is that some plants live on fungi, but the same fungus that supports the plant, lives on the plant in turn. This is known as the principle of symbiosis. It was often a puzzle to find plants, supposed to live on dead vegetable matter, and called saprophytes, without a particle of any vegetable matter to feed on. In these cases, the mushroomy odor may be easily detected in the soil, though no dead root be present. In brief, the fungus and the flowering plant, like the lion and the lamb, are lying down in friendly companionship together. Even those leathery structures on rocks and trees known as lichens, are but water weeds and mushrooms (algæ and fungi) that have agreed to join hands and travel through life together.

The Tuckahoe is a fungus, related to the puff-ball family, but living wholly underground. The facts collected by MEEHANS' MONTHLY indicate that in all probability it is in symbiosis with other members of the mushroom family. These fungi may need dead wood for some phase of their development, and the initial development of the Tuckahoe, coming along at that time, goes on as if it were itself a lover of deadwood; but as in other cases noted, it may form a connection with the fungus when it is free from its regular work. Then it can be found without any trace of deadwood for a matrix.

The pretty vine with the tuberous root, noted by our correspondent as belonging to the *Convolvulus*, is the "man-of-the-earth," roots of which have been said to reach the size of a "wheelbarrow." The truffle is a subterranean fungus, and not a vine.

NATURE IN AUTUMN.—An enthusiastic lover of nature is a curious being. He is prone to wander off alone—or with but few companions where the solitude of undisturbed nature may give to his sensitive heart emotions that are alone lent by grandeur. Similar feelings may be called up by less natural means, such as the effect of a speaker before a great assembly of men where his words find sympathy and response in the hearts of his listeners. But nature, alone, has the true power of impression. She speaks, and it is unforgotten; she fills the heart with sympathy, and it remains. Cruelty and passion are extinguished when she is heard and regarded. Surely, sin and vice will grow less in the world when our children are brought up to interest in the purity of nature. It is natural for humanity to lean towards sin and what are called mere worldly pleasures. But what is to be expected of those who are bred within the walls of a city, where birds are known only as "a nuisance" or as the source of brilliant millinery; where flowers are best appreciated when most peculiarly wrought, by patronizing florists, to innumerable fashionable colors, or to monstrosities in size; where a cocoon would be considered a "nest" of "one of those pestiferous worms;" and where a tempting, stout puff ball would be "a poisonous toad-stool." Ye field and wood-roamers, stand up, and tell your city-stuffed friends what brightness has been added to your life by just a little knowledge of what nature reveals on every side!



STORM-BROKEN TREES.—SEE PAGE 169.

Tell them that woodlands are not merely to provide shade for picnics on a hot day, nor fields merely for pasturage. Explain that though nature appears to sleep at times, her fall and winter wardrobe is charming, and here and there are hidden lingering faces or awakening traces.

Bicycles are mentioned in connection with many subjects—why not with nature studies. There is nothing particularly natural about bicycles, unless it be the trudging of the pedals or the monkey-like hump of many

backs—a good point for Darwinians; but their possible aid in opening up the outlying country is worthy of thought. It is true that not many years back, botanists and naturalists were obliged to carry on their explorations by means of wagons or a-foot, and doubtless they saw much more; but the present idea involves particularly those who are not over-burdened with leisure time, and must make short trips. Already, several Philadelphia botanists have largely adopted this method for reaching fairly distant spots, where, the wheels hidden in some favoring clump of bushes, they are left free to roam as they choose.

What would be more enjoyable to an amateur wheelman than to spin along rural roadsides in the cool of autumn, through rustling woods in their vari-colored glory,—and finally the restful wandering among them; the finding of such familiar evergreen beauties as the Partridge Berry, with its scarlet twin-fruits, and the variegated foliage of the Pipsissewa or *Chimaphila*, the ferns, moss and the odd little lichens. Then there are the bright bunches of dogwood berries, and those of the Deciduous Holly, bitter-sweet, roses and False Solomon's-Seal. Here and there are stray flowers—perhaps violets or asters. Even the character of trees, and their bark, more distinct with the falling leaves, may be noted with interest. It is safe to say that such a "tramp" would drive away many a care and furnish pleasant memories for all time. M.

THE POISON VINE.—The article on Poison Ivy, in the September monthly, prompts me to say a few words.

The author says in opening: "In the spring is the time for people to be poisoned by this plant," and at the close, he says: "In this part of the world, the chief complaint of Rhus poisoning comes from colored leaf-gathering in the fall."

Now, my long experience with this family of plants, both the Poison Vine, the Poison Sumach, or Poison Ash, gives me facts to sustain both of these opinions, and to contradict them both. One party, 30 years' old, immune from boyhood, was recently poisoned by the vine, from contact in the spring. An octogenarian—a man of observation and education, a hunter, fisherman, soldier,—gathering colored leaves in autumn, was badly poisoned by the Poison Ash, or Poison Sumach. A slip, going the rounds of the papers, says: "That the colored-leaved species of the sumach are not poisonous."

Now it is a fact that both the *R. toxicodendron* and *R. Vernix* have bright-colored foliage at times. They are also easily distinguished in fruit, which is of a brownish or greenish white color.

Burning the Poison Ash in the brush heap, or the wood in the kitchen stove, has caused very bad poisoning. All persons are not susceptible. In the hay field in mid-summer, some of a gang of men and boys of a half dozen are frequently poisoned by the vine and the others escape.

Some persons have never been affected; others are so susceptible that they have been poisoned in going through swamps, where were Sumach bushes, but, to their knowledge, not touching them. The Poison Ivy is not supposed to act except from contact.

Having often suffered from the ivy in the hay field, I have learned that having been exposed to it, and feeling the burning, itching sensation that precedes the eruption, washing the exposed parts with salt water, will kill the poison and serves somewhat as a preventative on exposure. A solution of sugar of lead after the blisters appear allays the irritation and favors a cure. This is an old remedy, perhaps modern *materia medica* may do better.

An Indian gave me the name of a remedy which I have never tried, *i.e.* Clear-weed—*Adicea pumila*—of Britton & Brown.

T. S. GOLD.

It did not seem that there was contradiction in Mr. Steele's paper,—but that he was referring to actual contact at one season, and the infection by vapor at another.

In many ways there is evidence that "what is one man's meat," may be "another man's poison." Mosquito bites can scarcely be termed "meat" to anyone, but they irritate some less than others.

That "Rich-weed" is a good antidote for Rhus-poison, is believed. In regard to *Adicea*, the Kew Index makes *Adicea* of Rafinesque (not Britton & Brown) synonymous with *Urtica*, the true nettles,—while it refers *Adicea pumila*, of the same author, to *Pilea*. We had better stick to the widely known *Pilea pumila* until the doctors, who differ, agree among themselves.

GENERAL GARDENING.

"PLANT A TREE."

Plant oak or ash in useless spots of ground,
A birch or willow at the murmuring brook,
Some flowering shrub upon the grassy mound,
Or useful tree in any vacant nook.

The graceful maple and the fragrant pine,
In school-house grounds where children love to play;
Some hardy trees along the highway's line
To shade the traveler on his tiresome way.

—CHARLES L. LOCHMAN.

THE PURPLE AMERICAN SPINDLE TREE.—A South Carolina correspondent has this to say of that beautiful shrub,—or, we may almost say small tree,—the Purple American Spindle Tree, "Of berry-bearing plants for winter decoration of grounds—have you ever seen *Euonymus atropurpureus*, known by pharmacists as *Wahoo*, natural order *Celastraceæ*. Advise those desirous of adding to their possessions of this genus of plants to include this in their collection. With your readers, it can be recognized, as bearing smooth, five-celled drupes with the berries hanging on through the entire winter, here.

This is not the *Euonymus Americanus*, or Spindle Tree, but a much grander one. My tree was sent me over fifteen years ago, and is now fifteen feet high, branching to ten feet diameter. With rigid thinning-out of an overcrowded head, I throw all the strength with new growth and blooms, and the result is that the tree has been a blaze of coral—shaded, smooth, five-celled seed-pods; the inner lining of the pale, reddish, outer seed-pods are a deep golden yellow. The tree has a wide-spreading head (which the *Euonymus Americanus* has not), with the exquisite seed-pods crowded on slender, short and long stems, which can be cut, used easily and gracefully as house ornaments, or left hanging on tree, as desired."

The early botanists, that made Philadelphia their headquarters a century ago, introduced this plant, and it is now often found in the old gardens around there. It justifies all that our correspondent says of it, and more, for it claims attention by the beautiful autumn coloring of its leaves. It certainly is not as common in general cultivation as it deserves to be.

THE GINKGO AS A STREET TREE.—I think for a curb-stone tree among the best is Ginkgo of the Japanese, *Salisburia adiantifolia*, or Maidenhair tree of the botanists. Two of these interesting trees have flourished in Washington for sixty years or more, apart, however, and being unisexual, no seed was produced. We were two years rooting a hard-wood cutting, and have a good tree thus propagated. Mr. Jardine, a Frenchman, an importer of trees and shrubs, sold to the British legation two Ginkgos to plant each side of the port cochere. He charged $7.50 apiece for them. The bill was disputed, and we were made referee. The matter was compromised at $5 each. Shortly after, when searching for street trees, we visited Hoopes Brothers & Thomas, West Chester, Pa. Walking through the nursery with my friend, Josiah Hoopes, we came to a large block of Ginkgos. "There," he says, "you know that's a good thing, but our agents won't touch it. It won't sell." "What will you take for it?" I asked. "I'll take 40 cents apiece, just to get rid of them," was his reply. We bargained for three hundred. Pierce Street, Washington, D. C., is now planted with them and another short street, 17½, just west of Lafayette Square, where they are not so fine as on Pierce Street, owing to their being robbed by adjoining elms in the square, and the soil not so good. Here may be seen the effects of planting too close; nevertheless, they are very fine, and fruit freely. I have never seen an insect near them. This tree has a very interesting Boston history, which we find in Hooker's Kew Gardens Miscellany, vol. 2, 1850, under the heading, "The Ginkgo in Boston Commons." A Ginkgo tree formerly stood in a garden belonging to Mr. Green, which garden was in the centre of Boston. After his death (1832) the house and grounds

were sold. This tree was removed at the partial cost of the city (each of Mr. Green's children paying $100 toward the expense) to the wall encircling the Common, and planted before the windows of Mrs. Green's house, in which she resided since her husband's death. The tree is a native of China, and was of full size when Mr. Green, Sr., purchased the garden in 1798. It is now in fine leaf and beauty. The accompanying lines appeared in the public papers some months after the tree's removal. Dr. Bigelow is the author. This poem consists of fifteen stanzas. We quote the last:

"And so thou hast survived thy fall,
And fairly disappointed all
Who thought to see thee down;

And better days are stored for thee,
Long shalt thou live, triumphant tree,
And spread thy foliage broad and free,
A credit to the town."

Is this individual tree still triumphant? If not, how long did it live? Mr. Downing, three years afterward, wrote with approval of the operation of transplanting it. He gave its height as forty feet and its circumference as three feet. How is it now? A full history would be interesting. W. R. SMITH.

WHAT IS A BRIER?—Custom-house officials, as well as some importers, appealed to MEEHANS' MONTHLY to decide what is a "Brier" on which Congress placed an import duty. The intent of the law was plain. The intention was to tax stocks for grafting the finer roses on. But we were asked simply to define what was a "Brier." The answer was that "Brier" was an English term, devised by English nurserymen for English purposes, and they would not include Manetti, Multiflora, Boursault, and others in this term. As the custom-house desired to tax the Manetti, the decision was not wholly acceptable. The following paragraph, from *Gardening Illustrated*, accords with that decision, at any rate.

"To distinguish Brier from Rose foliage (*E. K.*)—The common hedge Briers, although a numerous and varied family, are quite distinct from cultivated Roses in leaf and wood. They have seven leaves, but many of the latter have seven also. Those of the Brier are about one-half the size of the majority of Roses. Each leaf is of a long lance shape, prettily serrated, wood light green, and covered with numerous brown prickles. There are many kinds of foster-stock employed for Roses beside the Brier, among them being the Manetti, with very light green leaves and reddish prickles, the De la Grifferaic, a rampant cluster Rose, of a pink color, with large foliage of a woolly appearance. We think from the specimen leaves sent that they are those of the latter, but we could have been more positive if you had enclosed a piece of the wood."

BLISTER BEETLE.—I recognize the fact that all creatures were created for some wise purpose. What that purpose is in the case of the beetle, whose works—but not name—I have known, I cannot divine. The name I now find on page 120 of the MONTHLY—Blister Beetle—what do the naturalists call him?

My first acquaintance with him was when I set out some annual asters, then I found that he knew where my *Clematis paniculata* and *Aralia* were located, and is exceedingly destructive to *Anemone Japonica*. Until I overcame my timidity and realized that he has neither bite nor sting for me, destruction was tedious. Fingers without gloves (not nice work) I find effective with him as with the rose beetle (and what is his name)? I pinch them without compunction.

J. HARMANUS FISHER.

There are a number of species. They belong to the genus *Cantharis*, as we used to know it,—though possibly, as in other branches of natural history, moderns may have divided the genus or changed the names.

EUONYMUS BERRIES.—A remarkably fine specimen of *Euonymus Japonicus*, recently noted, showed plainly its great value in its production of an abundance of scarlet fruit. As a winter effect,—the berries contrasting well with the dense evergreen foliage,—it is no mean rival of the holly. It is easy to grow, and has but one serious enemy—the well-known Euonymus scale. This insect spreads rapidly, and, if unchecked, will finally cover the stems. There is no difficulty in detecting it, being white in color, and destroying it by several applications of kerosene emulsion, finely sprayed on the bushes, or by a coating of slaked lime. The dark green foliage is very effective in summer, as well, and is at its best if protected from the sun in winter.

STORM-BROKEN TREES.—In the early part of the present year, an unusually heavy ice storm swept over Monroe and part of Pike counties in the northeastern part of Pennsylvania. The ice gathered on the forest trees and shrubs to a thickness of from one to two inches, and large trees were bent to the ground and in some instances trunks of from four to five inches in diameter were broken short off. Great limbs were twisted and distorted by the heavy weight as easily as a small twig would be in the hands of a child. For miles of forest and shrub land, scarcely a tree escaped injury, and after the lapse of six months bent and twisted limbs were still plainly visible. The greatest distortions, however, began to disappear about the beginning of April, and backwoodsmen say that gradually most of the branches which are not broken will resume their normal positions. The illustrations were made from photographs kindly furnished by Mr. Howard A. Chase, Philadelphia.

STORM-BROKEN TREES.

HOUSE-PLANTS REQUIRING BUT LITTLE CARE.—Busy people will find the following abbreviated list valuable as representing plants that are easily cared for. No house-plant can be considered a lazy man's plant—all should have some daily attention; but those mentioned bear up well under adverse circumstances. Rubber Plant, both variegated and green; Dracæna, variegated and green; *Cypripedium insigne*, a satisfactory species of Lady's Slipper orchid, the flowers of which last from four to six and eight weeks; Chinese Primulas; begonias, Umbrella Plant, or *Cyperus*, in several kinds; geraniums; *Peperomia*, *Ardisia*, *Cyclamen*, *Ophiopogon Japonica*, *Pandanus utilis*. Limiting the number to sufficient for placing around in rooms, in houses of average size, the suggestions are sufficient with the addition of the interesting Dutch bulbs, such as hyacinths, narcissus, etc. Palms, of course, are indispensable, though somewhat burdensome to clean when attacked by scale.

FIRES FROM IMPRISONED HEAT.—In cautioning against enclosing wood work over steam pipes, a recent author says fires will eventually occur, unless the wood is where it can be

kept damp. But it is never damp on the inner side when enclosed. Wood should never be air-tight around heat pipes of any kind. Air circulation should always be provided for.

NEW OR RARE PLANTS.

IMPROVED CANNAS.—The canna proves one of the most valuable kinds of plants for decorating American gardens. American florists have done wonders in the way of their improvement. In their natural condition, they are too leafy in proportion to bloom. The improved forms have showy flowers.

BEGONIAS AS BEDDING PLANTS.—BEGONIA BRUANTII.—The past year or so, much use has been made of the many species and varieties of Begonias as bedding plants in open-air gardening. Under the shade of a wall or fence, or where the soil is rather moist, they do admirably. The species illustrated on p. 171 is from a photo sent by Mr. John Coulson, gardener to Hon. Stephen Salisbury, Worcester, Mass. It is dwarf and remarkably floriferous. It is probably a hybrid, raised by that successful French florist, Bruant.

PHYSALIS FRANCHETTI.—I promised, last spring, to send you a final word, as far as concerns my own experience regarding what I am disposed to call that monumental floral "fake," the *Physalis Franchetti*, alias the Chinese Lantern Plant. My experience, last year, as you know, was eminently unsatisfactory. I thought I might have better luck the second year, after the plant had had a chance to get established. I found that it is strictly herbaceous, but the new plant does not spring from the place where the old one was. On the contrary, the root runs underground for nearly a yard, and at intervals of every three or four inches shoots are thrown up, thus making it a veritable weed, which would be difficult to exterminate if not taken in time. If these shoots are severed to make new plants, they do not seem to flourish. Of those left undisturbed, some dragged on a miserable existence for a few months, with leaves turning yellow, badly riddled by some undiscoverable flying insect, and all needing constant washing to keep down the red spider. Two or three other plants have lived until now (Aug. 26th), but not growing over eight inches at the utmost, one bearing one blossom, but the fruit not coming to perfection. On the whole, the result is even worse than last year. The experience of a neighbor is very similar to my own, and it is absolutely inconceivable to me, in the light of two years' experience, what there is in the plants to justify the boundlessly extravagant encomiums with which it was introduced.

L. C. L. JORDAN.

Bergen Point, N. J.

THE HARDY FLOWER GARDEN.

UTILIZING HARDY PLANTS IN THE CONSERVATORY.—Although a change from one class of plants to another at the arrival of winter is as a general thing agreeable, there are some hardy flowers that one does not like to lose sight of, or that, by reason of absence or diversion at the time of blooming, could not be enjoyed; or perhaps it may not be convenient to get or care for others. In such cases, many of the early-flowering plants, that have already done duty during their regular season, may be brought into use. While, in some cases, plants will continue to grow, and with vigor, regardless of a rest, most require, and all will prefer a period for rest. They should now be potted without delay, and the pot plunged in soil or ashes, until a few frosts give assurance that the rest must be perfect. Brought in-doors, they should be introduced gradually to heat, light and water.

The stock in hand will chiefly decide what shall be utilized. Any of the following will be found suitable and pleasing:

Aquilegia Canadensis (Scarlet Columbine), *Armeria maritima* (Sea Pink), *Astilbe Japonica*, *Convallaria majalis* (Lily-of-the-Valley) and its variegated-leafed form, *Dianthus plumarius* (Scotch Pink), *Dicentra spectabilis* (Bleeding Heart), *Epimedium roseum*, *Geum triflorum* *Lamium variegatum*, *Polemonium reptans*, *Saxifraga crassifolia*, violets, bloodroots, hepaticas, etc., etc.

BULBLETS ON LILY STEMS.—I have in my flower bed, a curious development on the stalk of a lily of the kind usually called Annunciation Lily. I am not sure of the botanical name, but it has a bulb with strict, succulent,

leaf-like parts, (foliations), very easily broken and divided. The stalk, of which I speak, sprang up strict and strong, apparently to form a flower stalk, to the height of six or eight inches. Then it was abruptly checked by some unknown cause, when all the leaves and the terminal bud withered, leaving a short, stout stalk. To-day there are, at the base of this stalk, springing from the places where the leaves were originally, eight well-formed, little bulbs, about ¾ inch in diameter with succulent foliations, and other less perfect bulblets, higher up. In some of these, there are two bulblets from one leaf bud. Several of these bulblets have put out two or more strong rootlets, that run down the stalk for an inch or more, apparently trying to reach the ground.

Thinking that this might interest the readers of the MONTHLY, and perhaps serve as a text for one of your instructive notes, I send it.

Yours very truly, SARAH D. MUNRO.

Buffalo, N. Y.

Nature has here started to practice the florists' art. Wherever there is a leaf on a stem, there is or should be a bud. This is known as an axillary bud. In some lily stems, we do not see them, but they are there, and the wide-awake florist knows it. He desires to increase the kind. He does not allow the blossoms to expand. In fact, the buds are pinched off as soon as they are formed. The flower stem is then peg'd down to the surface of a bed of

BEGONIA BRUANTII.—SEE PAGE 170.

sand, a peg being placed at each joint so as to have the joint pressed against the sandy soil. Buds soon appear. They become bulblets, and, pushing down roots into the rich sand, get food and become a fair size in one year. In our correspondent's case, nature assisted the growth, and the bulblets ensued.

FRUITS AND VEGETABLES.

PLANTING FRUIT TREES.—It is frequently asked whether it is better to plant fruit trees in autumn than in spring. Many prefer autumn, doing the planting early in October, stripping the foliage from the trees, if it has not already fallen. One year old peaches are excepted, as they do better set in spring, at least in the north. But these could be procured in the autumn, if desired, and heeled in, that tops and all are under ground for the winter.

When impracticable to plant in early autumn, it matters but little whether the work be done later or in the spring. As a rule, when pruning at planting is attended to, fruit trees are not difficult to get to live, planted at either season.

JOSEPH MEEHAN.

MID-WINTER ASPARAGUS GROWING.—The Missouri Experiment Station has been experimenting for the past two years with asparagus-growing, and has successfully grown asparagus in the open field in mid-winter by running steam into shallow tunnels between the asparagus rows. The asparagus field was first covered with 6 or 7 inches of heating horse manure, and the steam forced into the soil from the greenhouse boiler. By this means a large yield of fine asparagus was obtained throughout the months of December, January and February; the finest quality being gotten in the middle of January when the weather was coldest. Many of the sprouts were 12 or 14 inches long and an inch in diameter, bleached perfectly and very tender and delicious. The amount of steam required was very small, and for persons located near a good market the winter growing of asparagus would prove very profitable. Bulletin No. 43, by Prof. J. C. Whitten, Horticulturist, fully described this process and the results obtained. This illustrated bulletin is for free distribution among the farmers and gardeners, and may be had by addressing the Director of the Experiment Station, at Columbia.

PRESERVING APPLES.—It is not the freezing, but the thawing in the light, that is the chief agent in the destruction of vegetable life. As regards apples, Mr. McPike recently said, at a meeting of the Alton, Ills., Horticultural Society :—"Dr. Long, in taking care of his apples, one winter, lost two barrels. During the winter, in passing through his orchard, he found these barrels, the apples being frozen hard as bricks. They were taken to an open shed and left there till thawed out, gradually, and when opened the apples were found perfect in every way. The deduction we make from this is that we, as a rule, do not keep our apples cold enough. Mr. McPike then showed an apple, fine and sound, which he said had been frozen ; it was given him by a man in Upper Alton. He threw the apples on straw in the barn and covered them with blankets. They froze hard ; then thawed out gradually, and when examined were in perfect condition. In old days, many apples were kept in half cellars or holed in, and, I believe, those apples kept better than ours do in our modern cellars. Hereafter I shall keep mine outside and try results."

WINTER CRACKING OF THE BARK OF TREES.—The following is a good, old-fashion remedy, and perhaps unknown to many professional as well as amateur horticulturists, and gave good results wherever a fair trial was given.

It often happens that, in January and February, the sun's rays put the thermometer up to 40 or 50 degrees and more, and, consequently, thawing the bark ; but at night it freezes again. This will hurt a fruit tree, and especially a young one, if it occur many days in succession; therefore, save the trees from bark-cracking by planting a tree in autumn. Put, first of all, a strong pole on the south side, then prepare a solution of 1 grs. lime to 2 gallons of water, with a little fresh cow manure to make it stiff enough, to be easily applied with a brush. It is advisable to apply this solution up to the crown of the tree, but not on bark one year old, as it would do some harm. In certain localities, a tree with this

application would look unsightly, but under circumstances a little mixture of dark-colored clay would make it more presentable. This remedy is unusually good for peach, plum and apricot trees. J. P.

Lichens on Fruit Trees.—Whenever I go down south, I am struck again with the vast accumulations of lichens on the trunks and branches of pear and plum trees where they are not getting the best care. It is a sight to see, in some orchards. I am frequently asked if the mosses and lichens do any damage to the trees, and while we have always been taught on the theoretical basis that they do not, it has always seemed clear that such heavy growths of foreign plants, parasitic or only epiphytic, is incompatible with the thrift of a good orchard. This opinion prevails very generally among horticulturists at the present time, and it is interesting to note the remark made by an Englishman, William Salisbury, in 1816, in his "Hints addressed to Proprietors of Orchards and to Growers of Fruit in General." He says: "The cleaning of trees by scraping and cutting off all the moss and mistletoe, and thinning the trees of the wood where it is necessary, washing the trees all over in the winter season with hot lime and water, with a little oil or soft soap, to which sulphur and soot are excellent additions . . ." He does not include a predicate in this sentence, but it is clear what he means, especially as he adds at once: "No insect can exist in such a mixture; and those materials are also certain antidotes to all species of Lichen, the moss that usually grows on apple trees." In a foot-note he adds: "All species of moss bloom in the winter, at which time they are most easily destroyed."

F. A. Waugh.

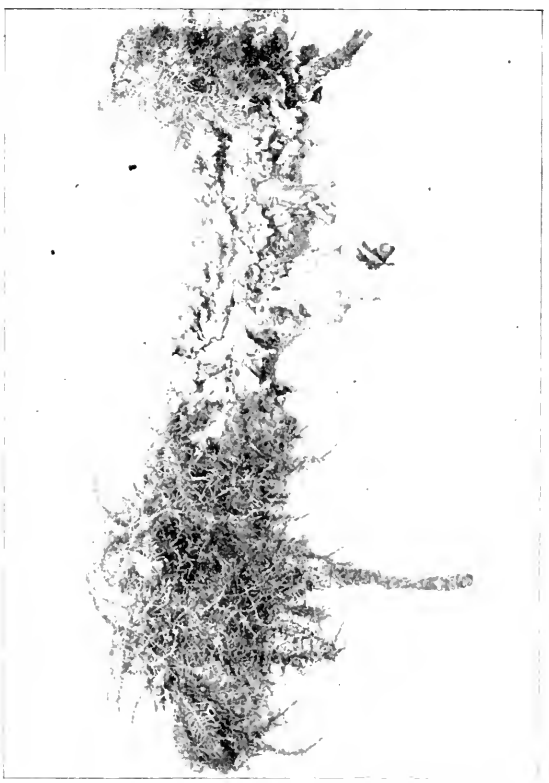
The Sand Cherry.—Among our wild arborescent plants, there is a great difference in the growth in different localities. For instance, the Sand Cherry, as it is found along the Atlantic Coast States, is universally a dwarf, yet in some parts of the West with other dwarfs, there are varieties which become large shrubs—or even small trees—at times. It is particularly the case with the Sand Cherry. Some of the Western cultivators have selected some of the individual plants that show special excellence, and it is more than likely that the Sand Cherry will eventually be admitted into the list of good market fruits.

Etiolates.—By *etiolates* is meant garden of produce, the leaves of which are developed and blanched in a shaded light. Bitter chicories, forced in caves, are better known under the name of Bearded Capuchin. Those set in the ground, and finally covered with a layer of manure, sell under the name of Witloof.

Many of the composites with thick roots may be blanched; for example, Dandelions, Viper's-grass, and Salsify. Viper's-grass is excellent. Radishes and Turnips, grown in the shade, make an excellent salad.

It is said that milfoil, etiolated, makes a pretty salad, of a pure and agreeable odor; we do not know whether or not this remark is well founded.

From *Lyon Horticole.*



LICHENS ON FRUIT TREES.

BIOGRAPHY AND LITERATURE.

HUMBLE WORTH.

A lowly roof may give us proof
That lowly flowers are often fairest,
And trees, whose bark is hard and dark,
May yield us fruit, and bloom the rarest.
—CHARLES SWAIN.

THE FLORA OF THE UPPER SUSQUEHANNA,—BY WILLARD NELSON CLUTE.—Published by Willard N. Clute & Co., Binghamton, N. Y. A botanist can not well do without complete works. The manuals, class-books, and illustrated floras are indispensable. But it is the simpler tasks, local floras especially, that are the great feeders of botanical society. Any populous centre that has achieved an eminence in botany will have their local floras to point to as the chief fountain source of their distinguished reputation.

This work of Professor Willard Clute is another star in this brilliant firmament. In many respects, it is the best we have seen; for it tells in a few brief words all that is needed by a collector to know, leaving the full description to the larger works which all advanced students have. Indeed, it tells more, by adding points of general history. These notes are so valuable that others besides those collecting in the upper Susquehanna will find it a little book profitable to have at hand. In brief, it is a good thing for general reference.

CHAPTERS ON THE NATURAL HISTORY OF THE UNITED STATES.—By R. W. Shufeldt, M. D. Published by Studer Brothers, 156 Fifth Avenue, New York. Popular education has made great strides in advance of late years. Children now are not given dictionaries to learn by heart, nor are they expected to turn their heads into encyclopoedias. The best educators are those who encourage children to learn what they love to learn,—to train their faculties, not to twist their brains. In defense of the old system of driving it in, it was said that as the twig is bent, the tree is inclined; but we find that the twig needs no bending, but asks our help to go straight on in its search for the light. And all children want to know something of all that is about them. It is delightful to go into school where nature studies are in order. The teacher need not be proficient in any branch of science as was formerly thought essential in a teacher. She now simply encourages the children to see, to compare, and to judge. The foundation for a strong character is thus laid, and the rest follows as a natural course. But all this is now considered by the best educators.

The volume before us is just in that line. A child would read it over with as much pleasure as he would the Arabian Nights or Robinson Crusoe. We could not have a better wish than that a copy could be in every school house,—and in every intelligent person's library.

CARYOPTERIS MASTACANTHUS.—This beautiful blue, flowering shrub of recent introduction has too hard a name for general use. It is no wonder the people at large searched for an easier one. Blue verbena, with which the plant started under these conditions, is unfortunate, for though it is a member of the verbenaceous family, there is little in common with the verbena itself. That common name is grossly deceptive.

Nicholson tells us that the original name, *Mastacanthus*, is derived from the bearded flowers, suggesting a moustache. It would be well to follow up this explanation by calling the shrub Moustache Plant.

BOSTON PUBLIC PARKS.—The question of public parks has become so universal, that it will be profitable for those interested to know what the older parks are doing. The twenty-third annual report of the Boston Park Commission is replete with useful information on park construction and management. We are indebted for the courtesy of Mr. John A. Pettigrew, the able superintendent of Franklin Park, Boston, for a copy, and from whom, doubtless, other copies may be obtained.

THE BAHIA ORANGE.—Having noticed the remarks of my friend, Prof. Emory E. Smith, of California, in a recent issue of MEEHANS' MONTHLY, and as there are some errors which I am sure he will be glad to have corrected, I take the liberty to give a brief history of this valuable orange.

About the year 1866, Mr. Wm. Saunders, of the U. S. Department of Agriculture, heard of a choice variety of orange growing about the city of Bahia (pronounced Bah-yah), Brazil, and with the assistance of a lady traveling in that region, he had twelve little trees budded and sent to Washington, which arrived in 1870. All of them were at once planted in the orange house of the Department of Agriculture and grew. From these twelve trees, Mr. Saunders indiscriminately propagated many young ones, by budding on seedlings which he grew for that purpose. It was these *young* trees that were distributed and not any of the *original* ones. Prof. Smith has fallen into the same error that many others have, in supposing that one of the original trees had been sent to Riverside, Cal. Instead, *two* of the young trees grown at Washington were sent to Mr. L. C. Tibbetts and planted near his house, where they bore, and first proved the great value of the variety for that State. I plucked and ate fruit from both these trees in 1888.

It was the abundant fruitage of these two trees and their progeny that caused many to think that they were of a different type from the other Navel Orange trees that emanated from Washington at the same time and from the same stock; because, the variety proved to be much more productive there than in Florida and Louisiana. Somehow, the climatic conditions are more favorable to the setting and holding of the fruit there than elsewhere; but the flavor of that grown there is more tart and the skin much thicker than of that grown in Florida. Why the trees are thus variable in productiveness, is a mystery that orange growers are anxious to have solved, because it cuts off, in a large measure, the profitable commercial growing of this choice orange in the Gulf States. Its stamens in all climates where I have seen them, are utterly devoid of pollen, and its pistils are abnormally constructed, except in very rare cases where seeds have been known to have been formed in the fruits. And, in such cases, it is quite probable that the seeds were the result of pollination by other varieties growing near by.

How or where this orange originated is not known. Whether it came into existence in the province (not "island" as E. E. S. says) of Bahia, Brazil, or was taken there from Europe or elsewhere, is uncertain. One thing that leads me to believe the latter, is, that Mr. Wm. Saunders, of Washington, D. C., obtained the same variety, under the name "*Melitensis*," from the *Jardin des Plantes*, in Paris, France, immediately after the Franco-Prussian war. It had been grown there in the houses as one of a collection of exotic fruits of many kinds, made for the U. S. Government, but from whence it was brought, is not certainly known, though it was, probably, from the Mediterranean region. It was one of a few that escaped destruction by the German bombardment.

While the name Bahia (Bah-yah) is the correct one, according to all pomological rules, it is not, and perhaps never will be, the popular one; "Washington Navel" superceding it. The latter was given it in California first, to distinguish the variety from one called "Australian Navel," which is of inferior quality. There are other "Navel" oranges, all being so called by reason of their peculiar umbilical mark at the apex of the fruit. This results from the abnormality of the pistillate organs. There is a multiplicity of deformed ovaries, the interior ones forming a secondary orange, which is often very small and ill-formed, and which enlarges and protrudes enough in nearly every case to form a navel-like opening. I have seen some navel varieties bearing an abundance of pollen and sometimes seeds. The navel mark occurs occasionally in many varieties, especially in the seedlings from Italy and Spain. Some of the Japanese kinds show it indistinctly, but quite commonly.

H. E. VAN DEMAN.

August 7, 1898.

PRANG'S STANDARD OF COLOR.—The grand invention of Louis Prang, by which color in all its shades can be as definitely described as we can tell the temperature by a thermometer, has called for a popular edition which is now before us. Unlike an expensive thermometer,

it can be secured for the low price of fifty cents. Published by Louis Prang, Boston, Mass.

HOWARD WORCESTER GILBERT.—Poets are said to be born, not made. It is unfortunate for the world that reputations do not follow the same rule. Modest worth, like humble violets, abound,—but, so like the violet covered with fallen leaves of mightier growths, that it has often to be searched for before seen. Rhymesters abound, and even where beautiful thoughts float on the surface, they are so covered by tortured language that they pain rather than please. True poets are not rare, but remain unknown. Of Mrs. Florence Earle Coates, we get a glimpse once in a while, but Mary Bryan Clarke, Lloyd Mifflin, Howard Worcester Gilbert, and some others that might be named—poets that may fairly rank with our own Bryant, Longfellow, and Lowell, come and go, and the world knows little of treasures it possesses. Gilbert gave only a few friends the knowledge of his worth, by the printing for private circulation only, his exquisite verses. Some taste of their sweetness, the readers of MEEHANS' MONTHLY have enjoyed.

A local New Jersey newspaper, refers in a casual way, to his "recent death." When Keats, in despair, dictated for his own epitaph "Here lies one whose name is writ in water," he could have extended its application beyond himself.

GENERAL NOTES.

PLUMS—A REWARD FOR INDUSTRY.—When the writer was in Alaska years ago, and the only white men there were zealous missionaries among the Indians, he was present at a convocation where the missionary was instructing the half-converted natives. Suddenly an athletic Indian rose and surprised all by declaring, "I tell you, I have no more to do with Jesus. You tell me ask, and I get I ask Jesus to send me hatchet and keg of nails. He send me no hatchet, no nails. I pray to Him no more." The missionary seemed to feel he had to meet the man's ideas on his own ground. He talked at him, as one might say, by addressing the others assembled. "Look at John! See his strong limbs," and so he went on as if he were detailing the good points of a pugilist, and then asked "did you ever know John work? You know how he lazys and loafs around, what would he do if he had a hatchet and keg of nails? I tell you friends, Jesus has nothing to do with lazy men." The elder "brethren" evidently showed by their countenances, that they considered the missionary had the best of John.

The lesson was taught in what we may consider a somewhat uncouth way, but it is surely in evidence in horticulture that nature has no use for a stupid, lazy man. The ravages of weeds, blights and insects, fearful to the lazy and indifferent, are providential happenings to the industrious and intelligent. The former folds his hands and starves, — the latter "mounts barbed steeds and fights the fearful adversaries" as Shakespeare would say, and he conquers. A few years ago plum-growing was abandoned. "They won't do any more." Fungi and insects had the field to themselves. But the industrious Geneva horticulturists set to work. Willard, E. D. Smith, and others devised plans for successfully opposing the enemy. With little competition in the market, they have placed their products everywhere. They are profiting by their industry. Verily nature has no use for lazy men.

DAKOTA VETCH.—Under the name of Dakota Vetch, the United States Department of Agriculture recommends a wild plant of the "Rocky Mountain Region of the Northwest," as being one of the "most highly prized native forage plants." The plant, it tells us, is *Lotus Americanus*. This is probably some mouldy name repolished. The genus *Lotus* is wholly an Old World set of plants. There is no known species described in any work treating of the plants of the Rocky Mountain region. It is questionable whether there are a score of intelligent agriculturists who have the remotest idea what the Department is talking about.

UTILITY OF THE BIRCH TREE. — Russian leather, remarkable for its flexibility, its waterproof character and especially its peculiar odor which drives away insects, owes its qualities to oil drawn from the birch tree with which it is impregnated.

—From *La Semaine Horticole.*

LIATRIS ODORATISSIMA.

CAROLINA VANILLA-PLANT.

NATURAL ORDER, COMPOSITÆ.

LIATRIS ODORATISSIMA, Willdenow.—Root not tuberous; leaves obovate or oblong; heads few-flowered, corymbed or panicled; pappus minutely bearded. Stem herbaceous, smooth; leaves smooth and often glaucous, obtuse; the lowest spatulate—obovate, three to five-ribbed, the upper oval or oblong, small, sessile; heads seven to eight flowered, disposed in an ample spreading corymb or panicle. Chapman's *Flora of the Southern United States*, Gray's *Manual of the Botany of the Northern United States*, and Wood's *Class-Book of Botany*.

The beautiful flower here illustrated is one of the brightest ornaments of old fields, pine barrens, and sandy wastes, commencing its natural boundaries in Virginia and where it is more or less scattered, extending southwardly along the Seaboard States to Texas, where it is often found growing together in large masses, and giving no ordinary aspect of floral beauty to the beholder. All the species of *Liatris* are more or less ornamental, but they usually have the flowers in spikes, or branched panicles, while the section of which our present species is a member, has corymbose flowers. This character, together with the fact that the roots are more or less fibrous, while the spicate ones are somewhat tuberous, and some other small differences, induced Cassini, an eminent author of the early part of the century, to make, for the corymbose, fibrous-rooted section, a new genus under the name of *Trilisia*. Most botanists have used the name to represent the section, and Dr. Asa Gray so employs it in the "Manual," though he adopts it as of full generic importance in the "Synoptical Flora." It is one of those cases, not uncommon in systematic botany, where the eye insists on a distinction which descriptive terms can scarcely reach. The foliage and general characteristics are unlike their appearances in the spicate kinds. But there is one remarkable biological character in which they differ, which has not been noted by other observers. It has been long observed, and especially emphasized by the writer of these lines, that growth in plants is not continuous but rhythmic, and the rests between each rhythmic movement have much to do with the origin of the species or even genera. In the case of the spicate species of *Liatris*, the flower buds do not develop far before growth stops, and there is a complete rest until the flower stalk has reached its full length. The growth-energy then acts on the lateral buds, and from the top downwards the full opening then takes its course. The earliest bud formed on the spike is the last to fully open. This method of flowering is common to many *compositæ*. In the group *Trilisia*, however, this character is nearly lost, and the lower flower buds take no rhythmic rest, but are perfectly developed before the upper ones open. It will thus be seen that characters, derived from a centrifugal or centripetal inflorescence, may be useful in generic constructions. Another interesting feature, not common to plants in general, is the marked distinction in the color line between the stem and stem-leaves. Almost from its earliest start, the flower stems take on a rosy tint, but except to an occasional veinlet, none of this bright coloration reaches the leaves. In most plants, there is a tendency to narrow the leaf-blade, as the leaves become floral bracts,—and this is the case with the spicate species of *Liatris;* but in this one, the narrow root-leaf (2) becomes broadened a few nodes higher (3); and is still broader than long when it has almost reached the branching line (4). All through the inflorescence, the diminishing leaves retain this broadened scale-like form. No one has been able to guess how Cassini derived the name *Trilisia*, as there seems nothing in the plant to suggest "three lines;" but one noting the striking differences between these species might almost conclude that *Trilisia* was intended as a backward pronunciation of *Liatris*, in order to characterize the antagonistic distinctions between them.

In connection with this subject of nomenclature, it may be noted that some modern botanists, who contend that the earliest name given to a species should still be adopted, no matter how many years it may have been passed over, are using the name *Laciniaria* instead of *Liatris*, because it was employed by Sir John Hill, in a work called "*Systema Natura*," in 1762; while *Liatris* does not appear till Schreber's Edition of Linnæus in 1791. As all leading systematic botanists were well acquainted with Hill's work, it is reasonable to suppose they must have had reasons which seemed good to them for wholly ignoring his names as against the canon of priority which they themselves formulated. It appears from the history of the times that he was regarded as a charlatan and an unprincipled fellow,—not only by botanists, but by many other classes of society, and his works were ignored as wholly untrustworthy. He dabbled in many things about which he knew nothing, solely for money-making purposes, and yet his brilliancy of talent gave his undertakings an air of plausibility which aided him in many quarters. *Systema Natura* was in 26 volumes, and sold for about $1,000 in our money of to-day. He seems to have dipped into theatricals as well as botany and medicines,judging by the famous couplet of Garrick, which is said to have reference to Hill :

"For physic and farces his rival there scarce is,—
His farces are physic, his physic a farce is."

As we are advised to

"Let the dead past bury its dead,"

it seems scarcely desirable in us to toy with the dry bones at this late day.

Although our plant is credited to the whole Eastern States fro n Virginia to Florida, it was first made known to us from the Carolinas. It was introduced to British gardens from there in 1786 by the famous John Fraser, but does not seem to have been recognized as a true *Liatris* at that time Walter, who published a Flora of Carolina, made for it a genus which he styled *Anonymos*,—and this species *An. odoratissima*. It was called *Trilisia odoratissisma*, by Cassini, in 1816 If not a true *Liatris*, the modern theory of primitive names would probably insist that Walter's *Anonymos* should now be adopted.

The specimen illustrated was furnished by the late Dr. Thomas Wood, of Wilmington, North Carolina, who wrote of it : "It is surprising that more has not been done to utilize this plant, but our Southern people are too much engrossed in bread-getting to listen to doctors who are only theorizers, as they think. The separation of *coumarin*, which abounds in its leaves, will some day make a fortune for some man. The leaves have been used at the tobacco factories, which consume immense quantities of *tonka;* but there was some objection to it as a substitute. The objection can be overcome by separating the *coumarin* from the leaves in crystals, and thus getting rid of the 'weedy' odor." It is stated, in government reports, that 39 bales of "Wild Vanilla" —as from its sweet odor when dry it is commonly termed in Florida—were shipped from Silver Springs to Savannah, bringing the shipper 20 cents a pound; but it is not known why the trade subsequently declined. Dr. Wood's note, as given above, furnishes the explanation. One of its common names is "Deer-tongue"—doubtless, from the form of the root-leaves as given in Fig. 2 of the plate.

The Tonka Bean, referred to in the letter of Dr. Wood above cited, is a tree of the Leguminose family, and a native of Venezuela There is a large trade in collecting and importing the beans. The botanical name is *Dipterix odorata*. The fruit is fleshy and resembles a flattened plum, rather than a dry loment, as most of the bean family do. This fleshy pod yields but a single seed, much as a plum would do. The following is an account of its virtues as recounted by Dr. Lindley in the "Vegetable Kingdom":—The volatile oil of *Dipterix odorata*, or Tonka Bean, a fragrant seed used by perfumers in making snuff, has been ascertained to contain a peculiar principle called Coumarin. It may be found in a crystalised state between the skin and the kernel, and exists abundantly in the flowers of *Melilotus officinalis* and *cæ ulea*, the latter of which gives the peculiar odor to the Chapziger cheese in Switzerland, and is said to possess styptic properties, and to have relieved cases of bloody urine from inward contusions. It is also employed in the preparation of an oily remedy for bruises.

EXPLANATION OF THE PLATE.—1 Upper portion of a flower stem. 2 Root-leaf. 3 A mid-section of flower stem. 4. Section of stem at about three-fourths its length.

WILD FLOWERS AND NATURE.

STERN NATURE.

Dear Nature is the kindest mother still,
  Though always changing, in her aspect mild ;
From her bare bosom let me take my fill,
  Her never-wean'd, though not her favor'd child,
  Oh ! she is fairest in her features wild,
Where nothing polish'd dares pollute her path ;
  To me by day or night she ever smil'd,
Though I have mark'd her when none other hath,
And sought her more and more, and lov'd her best
  in wrath. —BYRON.

ORIGIN OF SPECIES.—On the Galapagos Islands, are many species of plants which are found nowhere else in the world. How did those species originate? What are the views of the conductors of MEEHANS' MONTHLY on the subject? Would not a thorough investigation of the geology and natural history of this archipelago, in all probability, throw more light on the vexed question of the origin of species?

F. N. TILLINGHAST.

Greenport, N. Y.

To the mind of the senior conductor of MEEHANS' MONTHLY, the progress of knowledge only renders the origin of species more obscure. The old idea that the species of plants and animals sprang from an individual or pair of individuals that were at once mature, was not acceptable to scientific minds. It was found difficult to define what was a species under this idea, for, as Darwin showed by the dropping out of slight variations, the extreme forms of recognized variations were as distinct as any recognized species. It came to be admitted that all genera and species of organized beings might, in the struggle for life and survival of the fittest, or, as Darwin would say, by natural selection, have originated in this way. But this modern doctrine of evolution is surrounded by difficulties as well as the more primitive belief. It still involves limited centres from which the species sprung. In many cases, individual plants would have to be the progenitors of species, just as in the other case ; while the gradual spread of the descendants of these species over whole continents, and distant continents, especially before the advent of man to aid in the dispersion, is incomprehensible. It seems to the writer of this, that in view of the wide dispersion of the same species of plants and animals over the globe, no theory which builds on a local origin is tenable.

At times, we get glimpses of how these beings became localized, as in the case of the Galapagos Island plants referred to. On the American continent, we find a fair relationship in the flora, until the Rocky Mountain region is reached. Thence to the Pacific Coast, there are few plants identical with those east of the Rockies. But when we get to Japan, we find the flora in close relationship with that of the Atlantic States, and in many cases identical with them. If species progressed from a distinct centre in each case, and spread from this centre, there must have been land between the Rocky Mountains and Japan, for the plants to travel by, then water again, and then again land between the region of the Rockies and the present line of the Pacific. Geology seems to indicate that this was the case. If so, myriads of plants must have been destroyed with the submerged land, and in some cases all, or nearly all, of some species. Submerged land would carry away all but the few Galapagos species. But this view upsets the foundation on which natural selection rests. For it shows that species can remain, and has remained myriads of years under the most varying conditions, exactly the same!

In discussing these questions, it would seem that one story is good until another is told.

PECULIAR BEHAVIORS OF PLANTS.—Speculations on the reasons for the behavior of plants enter largely into the pleasures of modern botanical studies. There is scarcely one started that cannot be fairly objected to, but at the same time, they furnish objects for study. If the student holds the mind open to any conclusion that the facts may lead to, they are very helpful aids to pleasurable investigation.

FREEZING OF SAP IN PLANTS.—On reading the article on "Freezing of the Sap in Living Plants" on page 148 of MEEHANS' MONTHLY for October, I thought perhaps a statement of an experiment I made with a maple and its sap might be interesting.

Some believe that sap in trees freeze, and others disbelieve it. Are there not two sides to this question? May not both parties be partially correct?

Maple sap is mostly composed of water and sugar; water, by far, being the largest ingredient, from ninety to ninety-eight per cent. May not the water freeze, and the sugar not, and so harmonize discordant views? Now for the experiment: I was testing the pressure and suction of the maple at the time of sap-flow in the spring. I bored a tree, as usual for catching sap, and inserted a hard-wood plug tapering at both ends, then drove it into the tree, connecting it with glass tubing with a short rubber tube, and running the tubing up some eleven feet.

During the day,—while the tree was in pressure, the sap would flow over the top, and as night approached, the tree would change from pressure to suction, taking the sap back into the tree.

When I foresaw a cold, freezing night coming, I would disconnect the tubing from the tree, letting the sap out, fearing (in my ignorance) that the tubing would be broken; but on one cool night, I went down to the house, forgetting to disconnect. On going up in the morning, I supposed I should find my glass tubing all broken, but to my surprise I found it otherwise. I found the tubing full of canker-ice as white as snow. I took it all down and melted the contents, and found it to contain no sugar whatever.

It appears, then, that the tree was taking back the sap until the temperature came so low that the *water* of the sap froze, but the tree, being still in suction, took back the *sugar*, as that could not freeze. TIMOTHY WHEELER.

Moscow, Vt.

The note of Mr. Wheeler is especially instructive. The point he makes, in regard to there being two sides to the case, is well worth remembering at all times. Language is incapable of conveying to others what the party of the first part desires. It is to this poverty of language that so many seeming differences arise. For instance, in the present subject matter, when the proposition is made that sap in plants does not freeze, the idea intended to be expressed is, the sap in the original living cell. That sap, itself, aside from its hold on the cell that originally held it, will freeze, is a fact too well known to be disputed. In cutting down old trees, in winter, ice may be found in the cell spaces; and the frozen icicles, from the trees that bleed in early spring, must be fresh in the memory of all observers, Cider is but the sap of a tree, and it will freeze. All this is true,—and Mr. Wheeler furnishes another interesting illustration. But it is true, at the same time, that when the sap in the living cell freezes, death ensues. The idea is,—not that sap in the living cell is not susceptible to expansion by frost, but that it cannot do so, and the cell retain life. The fact of vegetation getting through the winter alive, is sufficient evidence that the sap in the living cell did not get frozen.

SPANISH MOSS.—In forests of the Atlantic and Pacific States, the trees often sustain a long-branching lichen known as *Usnea*. It is from the resemblance—*oides*—to this lichen that the member of the pine-apple family, known as Spanish Moss, takes its name,—*Tillandsia usneoides*. It is not a parasite, but an epiphyte. It gets its living from the atmosphere, merely attaching itself to the tree as a sort of anchorage. It will live just as well when hung on a tree as attached to it, if there be moisture in the air. It attaches itself to the tree only when the seed is germinating. When broken off, it has never been known to effect a re-attachment.

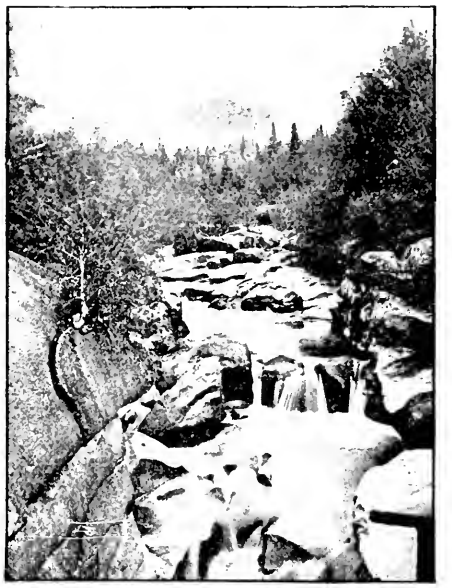
CYPRESS KNEES.—The curious protuberances or "knees" from the roots of the Southern Cypress are well known. Mr. W. C. Egan sends a sketch of a similar "knee" thrown up by an akebia. It is from near the collar of the plant, and is about 1½ inches high, and half an inch wide at the top,—a pretty good size for so small a root. Just what service these "knees" serve in the economy of the plant, is still a question. Many have tried their hands at writing explanations, the writer among others; but as time brings experience, there seems room for doubt that they have been really explained.

On the Ammonoosuc.—It seems appropriate, as I sit under the Speckled Alders, Rock Maples and Mountain Ashes that border the amber waters and rounded granite bowlders of the beautiful trout stream, Ammonoosuc, that I should tell you of my visit to its head waters and what I found there high on the west-facing slope of the great mountains. One of the chief branches of my river rises at the heads of the ravines on Mt. Clay, another from the very side of Mt. Washington and a third from the Lake of the Clouds between Washington and Monroe. These join at the foot of the range to form the swift stream that tumbles and leaps on down the slopes and out to the meadows to join the Connecticut between Vermont and New Hampshire.

My especial visit was to the Lake of the Clouds in company with Mr. Mathews, the author, of Boston. We arrived at the Summit House by rail at 10.30 a. m., September 2d, and in less than an hour had made our way down along the Crawford bridle path to the Lake, there to search for alpine plants. The first part of the tramp was steeply down over the roughest of granite rocks covered with bright verdigris-green lichens; here nothing of the higher order grew, but occasional patches of coarse low sedge, an alpine grass or so, abundance of Greenland Sandwort and Lapland *Diapensia*. As we reached more sheltered spots, the *Potentilla tridentata* became more abundant, some plants still producing delicate white flowers, but the most of it in seed and with brilliant scarlet foliage, making large, bright patches low over the ground.

After a descent of about 900 feet, we came to a level field between Washington and Monroe, where, as we descended from the ridge toward the Lake of the Clouds, our feet began to sink in a wonderful soft depth of spongy, moist sphagnum and other mosses, all interwoven with procumbent shrubs of Bearberry, willow, Turf-Bilberry, Labrador Tea, Foxberry, dwarf birch, and some stunted Fir and Red Spruce, just keeping up existence by hugging the surface and sinking their stems in the moss.

As we descended through the last 100 feet, we came upon a more sheltered area, where we first had a sight of the delicate Mountain Rattle-Snake-root, *Prenanthes Boottii*, the Alpine Violet, *Viola palustris*, putting up seed-vessels along its creeping stems; the Bunch-berry, *Cornus Canadensis*, the Star-flower *Trientalis*, and Green Hellebore *Veratrum viride*, here all small and stunted by the severe conditions. Under the shelter of a rock wall here, and not far from the water's edge, grew the gem of the mountains, the beautiful Peck's gentian, *Gentiana radiatum var. Peckii*, many plants still in bloom, the deep golden flower lovelier than any buttercup; and the fan-shaped, crinkled root-leaves turning deep crimson with the approach of more intense cold. Among the rocks and in the moss beds, grew also Alpine Azalea and Rhododendron,—now past the flowering season; and, in the more sheltered clefts of the granite, we marked especially



THE AMMONOOSUC.

two ferns, here reaching but a fraction of the size they attain in the lower woods, and beautifully bronzed by the midnight cold: *Phegopteris polypodioides*, and *Aspidium spinulosum*, var. *dilatatum*, Hook.

Having finished our search and our midday meal thus aloof from the haunts of men, we rose, ascended the slope and crossed the ridge to the south side of the slope to the head of Oakes' Gulf, famous in the history of American botany. Here, for the first time, we gathered Alpine Veronica, the pallid Painted Cup, with cream-green involucres and deeply-veined, lanceolate leaves; and the Alpine Service *Amelanchier oligocarpa*.

On the ridge between the East and South slopes, the wind swept almost continuously ; but even there, in the most exposed spots, on stems not an inch high, quivered deep-hued Hare Bells as large and beautiful as adorn the cliffs of the upper Delaware in June. Near them grew the minute Mountain Eye Bright *Euphrasia officinalis* var. *Tatarica* huddling foliage and inflorescence into one close, crisped, pretty bunch at the top of the stem, as if to keep warm, and sending the slenderest of tapering roots down into the rocky soil. Right by these, a low woolly cinque-foil *Potentilla frigida* hugged the earth in a little gray tuft, putting out its seed heads on thread-like pedicels from under shelter of the leaves. On the blasted field, where no other flowering plant would venture, the sturdy Lapland *Diapensia* set its foot, and not only stayed undaunted by cold winds, storms and fabulous winter temperatures, but preserved and grew, and spread in leathery, brown-green cushions to lift and unfold therefrom its beautiful white flowers.

We ventured farther down the gulf in view of our rich finds, and were rewarded by coming upon a patch of rich yellow arnica, and a large-flowered, thick-leaved aster.

Here we first met lowland plants coming up, heralded by a great Cow-parsnip, spreading its unmistakable leaves in a damp spot at the rise of a rivulet. Here, as well as in higher grounds, we saw seeds and even lingering blossoms of the Quaker-lady *Houstonia cærulea ;* and in every mat of moss, the red of the Foxberry or Mountain Cranberry, *Vaccinium Vitis-Idæa*, shone among its polished green, revolute leaves.

We left these rich fields to reach the Summit House before night-fall, pausing again and again to get breath and in the act, to revel in the sea of peaks about us, all bathed in indigo light shading away in the distance to the faintest, misty, atmospheric blue.

In the night, the thermometer fell to 30° ; but at eight in the morning, we were off again, down a new trail to the head of Tuckerman's Ravine, where we soon found Crowberry *Empetrum*, the firry-looking *Bryanthus*, and the delicate *Cassiope*, in fruit, and on a high ledge the deep red translucent dwarf raspberry *Rubus triflorus*, which ripens freely at high altitudes (here about 5,000 feet) and affords the climber a morsel which would be as delicious as a dewberry, if it were favored with the dewberry's warm lowland sunshine.

The delicate grasses and sedges were a feature about the moist rivulets. One grass bore a close resemblance to field timothy, but the others seemed quite unique.

After spending the morning in this beautiful spot, we returned to take our train, the author and artist, with a note book full of suggestive items and sketches, and I with a large vasculum packed and over flowing into my shoulder bag and pockets.

Twin Mountain, N. Y. NEWLIN WILLIAMS.

TRILLIUM VARIATIONS.—Mrs. Leonora Goodrich, of Syracuse, New York, found a beautifully variegated-flowered plant of *Trillium grandiflorum*. Believing she had found a new species, she was somewhat disappointed when Prof. Peck returned is as *Trillium grandiflorum var. variegatum*. Determined to look for more plants of her species, she went, one day in May, to the locality to find them. She not only found that variety, but numerous others, the specimens being now before the writer. Talk about variations in *Trillium !* Silence after these ! Sessile leaves, long petiolate leaves, and no leaves at all ; round leaves, long leaves, emarginate leaves and long-tailed leaves ; leaves in two's, threes, fives, and in some cases double whorls of leaves. Some leaves look in size like miniature cabbage leaves,—while one dear little fellow is so reduced, as to look more like a magnified specimen of the common Wood Anemone.

Though the writer had never seen such a wide range of variation in *Trillium*, the studies of recent years have brought him to look for them in any species of plant. Collecting botanists, in their hasty wanderings, are struck by a marked variation from the form usually seen. In the specimen goes to the port-folio or vasculum, and out it comes in print a hybrid with so and so. If they would take a part of a day looking for variations, as Mrs. Goodrich did, they would find innumerable variations as she did with *Trillium*. That they are not hybrids, but forms directed by varying degrees of internal energy, may be proved by taking genera of but a single species. Among trees, more striking variations may be found among Sweet Gums — *Liquidambar styraciflua*,—then among oaks or hickories,—

and when we come to more humble plants, a few hours collecting among dandelions will teach an instructive lesson. In some respects, botanical knowledge does not travel fast.

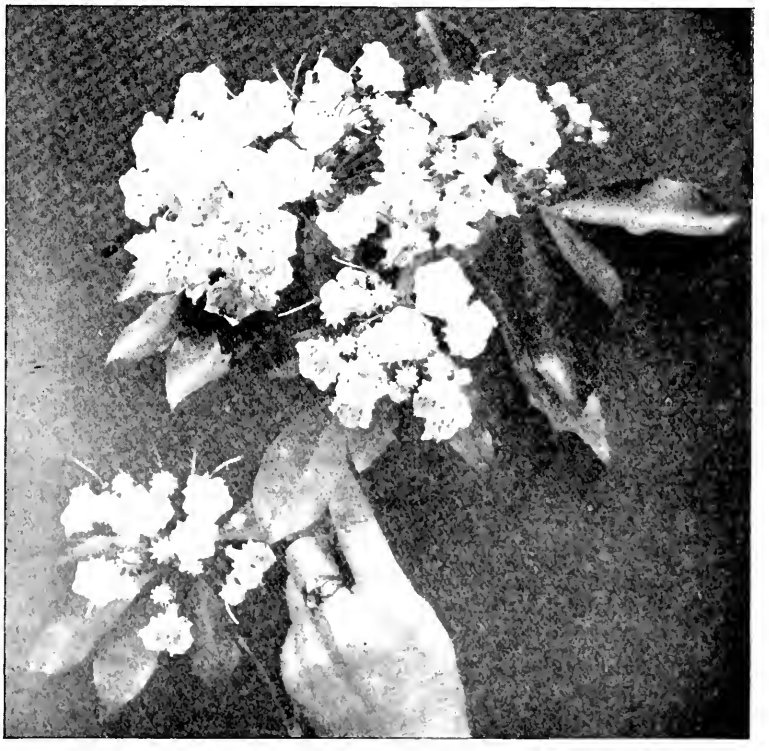
PEAT FOR FUEL.—On page 151, is an enquiry for information regarding peat: When I lived in Maryland, on a farm bordering on the Chesapeake Bay, there was a large deposit of peat and old wood some sixty or more feet beneath the surface soil. This deposit was about two feet above high-water mark. There was a seam of green sand just beneath the peat of about one foot in thickness. You know that the greensand gets its name from the sand like particles of potash mixed in with the earth, which gives this earth a greenish cast, and these particles mash easily beneath a knife point. This green sand is an excellent fertilizer, and is found in the same neighborhood mixed in with pre-historic shells forming layers of rock, easily broken, under a hammer. These shells are nearly as large as a dinner plate,—one a flat shell, the other very deep or concave. The deposit of peat is the layer just above the green sand, and is in some places six feet thick. I have taken, at different times, from this deposit, beech nuts, just thin shells, and pieces of wood flattened out or mashed into oval forms and, when dry, as light as cork. Large pieces of trees are often met with. This deposit was a hundred yards or more in length, and formed part of the bank on which now stands the Bay Ridge Hotel, at Tolley's Point, and owned now by the Baltimore & Ohio R. R. Co. This deposit of peat had a strong smell of sulphur, and I believe it would burn very readily when dry. There was also a white salt, which formed on the outside of the black masses of peat during hot, dry weather, which I now know to have been saltpetre. About six feet above this layer of peat, was a layer of cobble stones and large gravel; then above were masses of heavy clay for sixty feet or more. This point always had many charms for me in my Bayshore walks. I did not know then its value, and at that time it could have been worked very easily; but now it is in hands which I do not think will allow any one to work it out.

F. K. STEELE.

Festus, Jefferson County, Mo.

TRUE LEAVES IN PLANTS.—Mr. E. E. Bogue, Stillwater, Oklahoma, says:

The October MONTHLY has just come to hand, with its usual cheerful and helpful suggestions. I noticed, on page 151, in speaking of *Asparagus Sprengeri* (I have just made out an order for plants and included one of these to be used for a hanging basket) you say that some of the species of *Asparagus* have broad leaf-blades and mention, what is commonly called by florists, 'smilax' as an example. I was not aware that botanists had decided to call these leaf-like growths leaves. Bischoff gave them



KALMIA LAT FOLIA,—SEE PAGE 185.

the name of *phyllocladia;* and, in looking up the subject in several good texts, I fail to find that any change has been made for the distinction of these peculiar growths which partake partly of the characters of leaves and partly of stem."

Mr. Bogue's criticism is philosophically sound. The so-called leaves of the "smilax" of the florist are no more leaves than are those of the *Acacia* or Blue Gum. But after all, it would puzzle the botanist to draw an exact line between a true leaf and a phyllode,—the Greek derivative last quoted meaning something very like a leaf! For practical purposes, it is safe to treat them as true leaves, for they perform the functions the true leaf exercises.

YELLOW-BERRY HOLLY.—In reference to the yellow berries of the holly, mentioned in a recent number of the MONTHLY, it may be of interest to note that I have seen in Southern New York a clump of the holly's near relative, the Winter Berry *Ilex verticillata*, with bright orange berries. The fruit was in striking contrast to that of gleaming red on other bushes near by. As the clump bore the same colored fruit for several seasons, I think that the tendency to bear fruit of that particular color was inherent and not due to any seasonal accident. WILLARD N. CLUTE.

New York City.

The same variation in the color of *Ilex verticillata* berries is also reported by Mr. James Holloway, of Long Island.

What is perhaps equally interesting, is a yellow-berried yew, in the Meehans' Nurseries. It is in marked contrast with the bright red fruit of nearby trees.

BRACKEN IN A NEW HOME.—In reference to the paragraph, at page 147, under the above title, Prof. Willard N. Clute has had the opportunity of examining a good clump, and not a fragment as came to the office of publication, and kindly furnishes the following interesting note concerning this fern.

"In the autumn of '97, Mr. Curtis brought me a large clump of the fern from the Fifty-third Street locality. The largest frond was seventeen inches high and well fruited. I identified it as *Pteris tremula*, and this was subsequently confirmed by Dr. L. M. Underwood. The specimen is now in the herbarium of Columbia University. It is but natural that we should rather try to connect this plant with some of our native ferns, since the indications are that it has endured one or more winters here; but the fact seems to point otherwise. Additional evidence that exotic ferns may sometimes get a foothold here is shown by the case of *Dryopteris patens*, of Florida. This species was brought to me with the other, but at that time lacked fruiting fronds. It has since been discovered in fruit on a wall, in this city, by Mr. Will R. Maxon, and verifies the supposition originally entertained of it. As to the origin of these two ferns, it is probable that they sprung from wind-blown spores, which may have drifted from the nearest florist's. If so, it is less wonder that they should have been found here than that any of our native species should.

STRUCTURE OF A FLOWER.—Under the laws of Morphology, a complete flower is but modified leaf-blade and branch. If we can imagine a long coil of wire, drawn in so close that the spirals touch each other, we may form some idea how nature draws in the longitudinal growth of a branch to form a flower. At times, the branch objects to this summary proceeding, and, after being arrested and even the parts of the flower formed, will escape from the bondage, and journey on as a well-ordered branch should. Mr. Egan sends a branch of a moss rose that has fought for freedom in this way. A few good, clear petals had been formed, when the whole central portion started off on its journey as a perfect branch again. Those who have sharp eyes occasionally meet instances of this behavior in the rose and other plants. These departures are very instructive to the curious in the secrets of nature.

CAVE PALMS AND OTHER PLANTS.—I am told that the cave-palms of Yucatan were discovered in 1896 by a party of scientists from the University of Pennsylvania, and that some account of them is to be found in a book on Yucatan, published by the Lippincotts.

It is stated that in the South American caves, haunted by millions of oil-birds, or quach aros, many isolated plants grow in utter darkness; but it may be doubted whether any of them are long lived. Those caves ought to afford a useful guano. C. W. G.

GENERAL GARDENING.

CÆSAR'S PUBLIC PARK.

Moreover, he hath left you all his walks,
His private arbors, and new-planted orchards,
On this side Tiber; he hath left them you,
And to your heirs forever, common pleasures,
To walk abroad, and recreate yourselves.
Here was a Cæsar! when comes such another?

—MARC ANTONY'S EULOGY ON CÆSAR.

KALMIA LATIFOLIA.—The Wood Laurel is one of our most beautiful native flowers, and gives a distinctive character to American floral scenery. There is no member of the family in the Old World. The peculiar pockets, which hold fast the anthers until liberated by some external agency, are well shown in the picture. As in other species of plants, there is a wide range of variation in the individual members of the family,—especially in the shades of color. Last summer, from the mountains of Pennsylvania, flowers crimson at the base, with white margins, as if they were mimicing some *Hibiscus*, were sent to the conductors. In many respects, the Wood Laurel will vie with the Mountain Laurel, or *Rhododendron*, in beauty. They both require the same cultural treatment,—an open soil through which air and moisture will readily penetrate. The hair-like fibres cannot penetrate a compact soil. In the Old World, where these plants are appreciated, spongy soil is often brought a hundred miles, by the car-load or vessel-load, in order to furnish the conditions required.

The illustration, on page 183, is from a photo of a Florida specimen, kindly furnished by Mr. C. G. Pleas, of Chipley, in that State.

TOBACCO GROWING.—We are prone to think of tobacco as a Southern production, a staple of the tropics. It has, however, for many years, been grown in the Connecticut Valley. The soil, here, seems specially well adapted to its cultivation.

The tobacco-grower has to contend against all sorts of hazards. He is never without anxiety from the time his plants are seeded till they are harvested, housed and cured. To begin with, the cut-worm, working underground, may play havoc with the plants. Excessive rains and fogs are deleterious, and even drouth may cause injury. Heavy wind beats down and greatly affects the plants, while hail beats holes in the leaves and produces irreparable woe. A man may thus see a fortune go up in one thunderstorm. Again, a sudden frost, always a possibility in August, may totally ruin the crop.

Every capsule of a tobacco plant produces myriads of tiny seeds, almost like dust. Indeed, the teacher of botany always cites a tobacco plant as an example of excessive fecundity. The seed, to insure proper scattering, is often mingled with meal ere it is sown. The seed springs up in cold frames sometime in April. It used to be the custom to cover the young plants with cotton cloth, but glass has now totally replaced this. From the first to the tenth of June, the little plants are transplanted to the field, set out in rows about eighteen inches apart, or 9,000 plants to the acre. An acre produces from 1,600 to 2,000 pounds of dried tobacco.

It takes from seventy to eighty days for the plants to reach maturity. They are then stately and handsome, every leaf clean and elegant. All strength is diverted into the leaves by constantly topping the plants, nipping off the flowers and suppressing the axillary shoots. We have spoken of the insidious cut-worm; now comes another enemy, the familiar tobacco or tomato worm. He is a big, green, uncanny looking fellow, the larva of a sphinx or humming bird moth. About here, they do not seem plentiful, but this may be due to careful hand-picking. The perfected creature, found at night around evening primroses, honeysuckles and trumpet creepers is very beautiful.

The leaves of a fine tobacco plant are two feet or more in length about the middle of the plant, diminishing in size towards base and apex of stem. They are elliptical or oblanceolate in shape, with entire edges and feather-veining. By this is meant that there is a cen-

tral vein or mid-rib and smaller lateral veins passing out towards the margin. These, growing smaller, lose themselves in a mesh.

The flowers are borne in an open panicle and are rather pretty, the pinkish corolla being trumpet-shaped,—like a small morning-glory,—and 5-lobed on the border. Only a very few of the plants, from which the leaves are mostly removed, are allowed to go to seed. These are enough to produce the crop of the next year. In some instances, we are told, new seed is introduced from Cuba, some growers claiming that in our climate the plant runs out.

In the last two weeks in August the crop is ready for harvesting. It is then a beautiful feature in the landscape, its acres of blue-green foliage alternating often with the graceful fields of Indian corn. As the wind sweeps over it, the leaves are upturned and produce a ripple of high lights.

The harvesting process is a busy and interesting one. Only as many plants are cut at a time as can be quickly and conveniently handled. Hot sunlight is apt to burn or scorch it if exposed too long. It is cut with a thin bladed knife, close to the ground, and carefully spread out. The workers claim that some persons are made sick by handling it. The stems are downy with short glandular hairs. Within, they appear succulent, and with a decided white pith. They stain the hands more or less. About the time the spread-out plants are slightly wilted, an open wagon comes along fitted with racks. In expectation of the team, each plant is pierced at the stock end by a sharp knife placed in the end of a projecting beam. This is held in a slanting position by a frame. The pierced plants, five or six in number, are strung upon a slat, and these are taken up, just as they are, by the wagon. The work is very expeditious. When the wagon is loaded it drives off to the barns or drying sheds. Each plant hangs head downwards, limp and placid, and looks very much like the string of fish a boy carries on a birch twig.

The drying sheds are of all sizes, according to the means or ambitions of the owners. The plan is in all cases the same. They are made to open on every side—by long vertical doors—as if every other board turned on a hinge. Hence there is a free circulation of air. The plants, on their slats, are packed closely in these houses almost from roof to floor. Excessive heat, destructive cold, superabundant moisture, are again to be carefully guarded against.

We hear rumors this year of "spotted crops," or tobacco which has, while still growing, been marked with acid to imitate certain favorite brands. With due precautions, the crop is, in some years, a valuable one. The recent disturbances in Cuba and the Philippines have very seriously disturbed the output of those islands the most famous tobacco countries of the world The knowledge of this has naturally stimulated an unusual growth in the Connecticut Valley. Our native tobacco is, we understand, used largely for wrappers. It is expected that it will bring this year from 20 to 25 cents a pound. In some years, it has been as low as 2 cents. There is a profit at 12 cents.

The tobacco, hanging in the barns, remains there till about the first of November. The conditions are regulated by the doors. In time of high winds, these are closed to prevent lashing of the leaves. As curing proceeds, the danger from this is lessened. Excessive moisture has to be avoided, and, of course, in sharp frosts, the doors are closed. A time at last comes,—a foggy time is preferred,—when the plants can be taken down and stripped by hand. The leaves are then packed in convenient bundles and wrapped in paper for the market. The crops are usually sold by sample.

WM. WHITMAN BAILEY.

Providence, R. I.

THE VARIEGATED PERIWINKLE.—There are few more valuable plants, suited to ornamentation in window and conservatory culture, than the Variegated Periwinkle, *Vinca major variegata*. As its growth in pot culture is always drooping, it is admirably suited for placing on brackets or shelves in connection with loftier growing plants; while the creamy white of the variegation, in contrast with the remaining green portion of the leaf, renders it very attractive. The large blue flowers are very showy, though produced sparingly. What is more in its favor, with those who have no great amount of horticultural knowledge, is that it is willing to put up with almost any treatment and to thrive in almost any situation—in sun or shade, in a dry atmosphere or a moist one it makes itself at home.

ANTHURIUM VEITCHII.—I send a picture of a specimen plant of *Anthurium Veitchii*, grown here, and recently donated by Mr. Ellis, to the New York Botanical Society.

I have found the *Anthurium* to do extra work in the new potting compost, "Jadoo Fibre," although the plant in question was grown in a compost similar to that recommended by Mr. Thatcher, in the October number of the MONTHLY, page 155. While they need plenty of water, yet they don't like stagnant water about their roots, and it is therefore, important to give good drainage. A flower pot, several sizes smaller than that to be used, inverted inside, with plenty of charcoal or potsherds around it, is a good way; in potting it is also well to keep the crown of the plant a few inches above the rim of the pot—it improves their appearance.

When leaves are forming, it is important that they be protected from injury, as they grow very fast and are consequently tender.

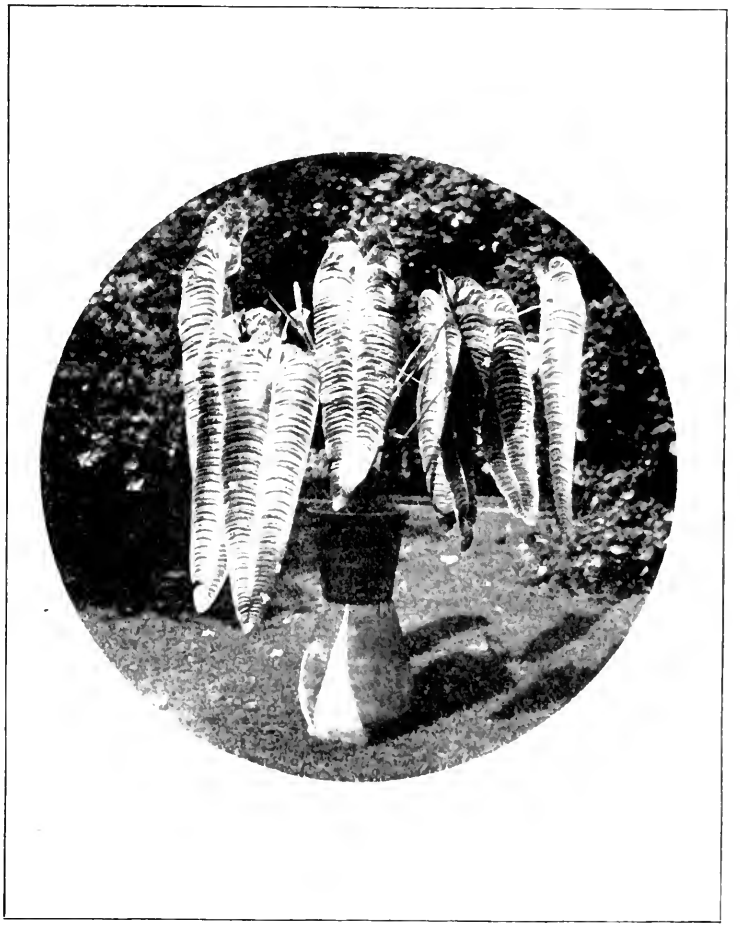
I have found the leaves of *A. Veitchii*, when forming, to stretch two inches every twenty-four hours.

ALEXANDER MACLELLAN.

SULPHUR INJECTIONS.—A Buffalo correspondent calls attention to a statement made by a Mr. E. W. Hudson, of 183 Fort Street, Detroit, that by boring a hole in fruit trees that had been wholly stripped of leaves by caterpillars, and filling the hole with sulphur, new leaves came out as if it were spring-time. The day following the operation, the withered leaves and dead caterpillars fell to the ground. "We all know," says our correspondent, "sulphur to be a mineral substance, not easily dissolved. Please explain through the MONTHLY.

It is not improbable that something might be introduced into a tree in this manner that would enter into circulation with the sap, but there have been no experiments placed on record, so far as the conductors know, made by parties capable of judging of the relations between cause and effect.

In this case, it may be noted that all trees, that lose their leaves before the normal time, push out new foliage "as if in spring." This is well-known with fruit trees that lose their leaves early from leaf-blight. Not only new leaves, but flowers towards fall, often follow. If even a tree could absorb sulphur, as Mr. Hudson believed it did, and if he will treat his trees in spring, before the caterpillars come, he will find no more effect on the caterpillars and leaves than the "brimstone and treacle," which no doubt the gentleman's grandmother used to dose her children with.



ANTHURIUM VEITCHII.

PRUNING TRANSPLANTED TREES.—The question that often presents itself to gardeners at this season is concerning the wisdom of pruning trees and shrubs newly planted at this time.

Is pruning best postponed until the spring before the sap rises, or soon after planting? Some claim that the tree has not so much to support if pruned just after planting.

AN EASTERN GARDENER.

Port Chester, N. Y.

It is difficult to lay down a general rule for these cases. So much depends on the kind of tree, and the spot where the trees are planted.

If we remember why it is desirable to prune, we may know how to act in special cases.

Where trees die after transplanting, in all cases, whether in winter or summer, it is because the moisture passes from the branches faster than the roots can supply the waste. If cold drying winds in winter, or warm drying winds in summer, are likely to follow transplanting, pruning lessens the quantity of moisture the roots are to be called on to supply. Hence if a tree should have poor roots,—or if the earth is not packed tightly about the roots, or if the trees are to be exposed to harsh cutting winds, the judgment of the one in charge as to how to prune or whether to prune or not, must be founded. It must be remembered that when a party buys a large tree it is always unfortunate that it should have to be cut at all. In a large number of cases where the conditions noted are favorable, there is no need of any pruning. It is a question for intelligent judgment rather than rule.

CINNAMON VINE.—There are a number of very beautiful climbing vines that are listed with herbaceous plants. These are very useful where it is desirable to have dense, low growth in summer time. Woody plants so often get naked below. Moreover, herbaceous climbers grow with wonderful rapidity. The Japanese yam is one of unique beauty.

It was introduced under this name as a vegetable; but when it got into gardens, it became Cinnamon Vine. It is *Dioscorea Japonica*.

GOLDEN-LEAVED GERANIUM. — The old Golden-leaved Geranium "New Life" is one of the most effective ornaments in combining leaf-colors in conservatory ornamentation. A plant by itself has rather a sickly aspect;—but, when surrounded by normal green-leaved varieties of its own species; the effect is charming.

THE COUNTRY SEAT OF H. H. HUNNEWELL, ESQ., WELLESLEY, NEAR BOSTON.—A Philadelphia correspondent, who has had opportunities for seeing fine gardens in many parts of America and in Europe, says, under date of June 10th, "on Wednesday I had the pleasure of visiting Mr. Hunnewell, at Wellesley. His place is remarkably fine. In fact, I think it the best I have seen in this country. The show of rhododendrons, azaleas and pines, and the care he gives to everything, is really remarkable for one of his age, being eighty-eight years old to-day. He received us most cordially."

NEW OR RARE PLANTS.

ANTIGONON LEPTOPUS.—Under the head of a novelty, and with the pleasing name of "The Mountain Beauty," this plant is accorded a full page colored illustration and a full page of description in the catalogue of a well-known florist. It is asserted to be perfectly hardy, to be a rapid grower, to cling to wood and stone like the *Ampelopsis Veitchii* and to flower profusely the first year from young plants sent out. It is further stated to be a native of Montana, recently introduced from Germany. Now there is something very peculiar in all this. Nicholson states that it is a native of Mexico, discovered in 1868. It is certain that seeds and plants have been offered by some florists for years. I myself have tried it from both seeds and plants for three years. As regards its hardiness over winter, I found that a clump of large tubers which had been well covered with manure were solid and sound in May. They had not yet started new growth. On being transplanted, they *never* started growth. I received a plant from a friend in Mobile, who says it is a very beautiful climber, and flowers well in that latitude. The plant I received from there has made but little growth and shows no signs of blooming. It has no tendrils with which to cling to wood or stone. It may be said that this is not the true *Antigonon leptopus* catalogued by the firm mentioned. The answer to this is that it is exactly the

same thing as the plants sent to me by the firm itself. This also has grown but very slowly, has no clinging tendrils, and shows no signs of blooming. Nicholson says it is a beautiful plant, but very hard to make bloom. The description in the catalogue says it will cover the whole side of a house like the *Ampelopsis Veitchii*, and in addition be filled with its gorgeous racemes of pink flowers. If this were so, then indeed we should have a veritable treasure. But what a pity if there should be some mistake! L. C. L. JORDAN.

Bergen Point, N. J.

The *Antigonon leptopus* is a South American plant, and will live out in winter time wherever the orange and banana will thrive, and nowhere else. It is to be regretted that people are so easily deceived. In one of the papers where there was an account of this wonderful fraud, the Editor advised a correspondent that it was possible to graft a rose on an apple tree,—but it would not be lasting, as in a few years the rose branches would bear apples, and there would be no rose bushes finally left. The only cure for these things is the spread of intelligent knowledge through the community.

THE HARDY FLOWER GARDEN.

A CHEAP AND EFFECTIVE INSECTICIDE.—The past year was one of great injury to rose-bushes and many other shrubs. Aphides, worms and slugs had made sad havoc with them. But I succeeded in keeping my plants in good condition by the use of a new insecticide which has the merit of being cheap, easily prepared, and extremely effective. It is made from the ordinary Ivory Soap of household use. I shave one-quarter pound of it up finely, cover it with water, and put it on the stove until it dissolves. Then I add it to five gallons of water, and spray the plants in such a manner that it is sure to reach every part of them. I consider it much superior to Whale-oil Soap, Kerosene Emulsion, or hellebore. For green-house plants use eight gallons of water instead of five.

Shiocton, Wis. EBEN E. REXFORD.

DESMODIUM PENDULIFLORUM.—Last spring, I purchased some nursery stock, and a plant of *Desmodium penduliflorum* was among the plants received. The plant was perhaps two years old. Same has done remarkably well. The main stem is something over six feet tall, and there are numerous side branches. About eighteen inches of the upper end of the main stem, as well as the side branches, are loaded with sprays of dark, rose-colored flowers. It is a sight to be seen. It keeps in bloom a long time, and is a very desirable plant. As much as I am aware of, *Desmodium penduliflorum* is as yet little known and planted, but it surely deserves a place in every garden. The plant is herbaceous, and the top dies down with the approaching winter. The roots penetrate the ground to a great depth. The plant will probably require covering of some kind during the winter in a colder climate; southward they do not need protection. C. FORKERT.

Ocean Springs, Miss.

In a note accompanying the above, the writer says the plant is not the *Desmodium penduliflorum* he saw some twenty years ago at Erfurt, Germany. This is another case arising from the change of names. The plant referred to by our correspondent in the article above was distributed by European nurserymen as *Desmodium penduliflorum*. It was not until it became widely distributed under this name, that it was given out as wrong. It should have been *Lespedeza bicolor*. *Desmodium penduliflorum* is quite another thing. It has become so well known under the name of *Desmodium penduliflorum*, that it has been found a financial loss to nurserymen to change it. In this case, a change to the genuine name would be advisable for all the loss and confusion, if the real *Desmodium penduliflorum* should get the popularity which this beautiful but mis-named plant has been made to bear.

FRUITS AND VEGETABLES.

WATER CRESS IN GERMANY.—An interesting translation of an article on water cress, from the German *Practical Gardener*, by Mrs. Wilhelmine Seliger, appears in the Hartford *Daily Times*. Erfurt is not only famous for seed growing the world over, but has a territory in which market gardening is permanent. It is known as the *Dreinbrunnen* districts. Deep ditches or canals are carried over the territory through which cool water flows,—

and the narrow beds between the ditches are where the vegetables grow. The streams grow the water-cresses. Fifty thousand bunches have been sold from this one tract in one season, bringing in $2,600 of our money—a little fortune in Germany. The water-cress business was started in 1665 by one, Hans Hartzan, who rented the ground for a small sum. Two brothers, named Matthew and Simon Engelhardt, took up the start made, and in 1687, ran the net-work of ditches over the land.

Old plants produce too hot and toothless an article, as all know who have had water-cress in an American restaurant. In these Erfurt streams, the plants are torn out twice a year, and new plantations made from the young tips. The bottom of the shallow streams are heavily manured, the tips planted, and the plants kept down by boards till the roots have taken hold. Of course, provision for keeping down the boards has to be made. This boarding process is one of the essentials of culture. The crisp, juicy product would not be secured without it. It bears the same relation to good water-cress as blanching does to good celery. With the tough, peppery stuff on American tables, it is no wonder water cress is not popular.

Abnormal Apple Blossom.—In the spring of 1896, I found a blossom on a two-inch limb, one of the lowest. The bloom was within three feet of the body of the tree.

This bud and bloom issued from a smooth limb.

In due time, the bloom fell off and an apple formed about the size of an Alaska pear, then it ceased to grow and it fell off.

The mystery is, how could a bud be formed in the spring? How could a bud issue out of a smooth two-inch limb? Why did the apple fail to mature? Could I in any way have assisted it to mature? Please explain.

T. Wheeler.

Moscow, Vt.

Cultivation in the Amateur's Orchard.—Every one likes good fruit, and but few gardens, however small, are thought complete without it. But notwithstanding the appreciation for good fruit, it is seldom found perfect in small gardens or orchards. The fault lies in too much dependence on the trees or rather a lack of interest in cultural methods. Trees are planted out in perhaps the most careful manner, after which they are expected to care for themselves and produce good fruit abundantly. The fact is, they need continual attention just as much as we do. This need not develop into a burden if regularly and properly attended to.

Now, one of the most important conditions to insure thrift is a soil mellow and cool in hot and dry weather, yet how frequently may trees be seen growing in sod or together with some crop that does not require cultivation. Such trees quickly outlive their usefulness, and their stunted branches can only produce under-sized and immature fruit.

Then old trees are expected to live on a small allowance of food. It is forgotten that the roots of a tree have to get their food from nearly the same soil year after year, and in the case of sod-land, even this food must be divided.

To have good fruit, health and vigor must be encouraged—not rank growth, which might be induced by over-feeding, for this is opposed to fruit-bearing.

For most moderate-sized orchards or gardens, it would be desirable to commence cultivating by plowing between the rows in late fall; but in light soils, summer harrowing is sufficient. Judgment must be exercised, as to the extent of cultivation, depending on the condition of the trees. Experience must teach how far from the tree trunk the roots extend, for care must be taken not to disturb them during the summer or feeding-time.

Good stable manure may be spread on the surface of the soil after the latter is frozen, provided the ground is comparatively level so the fertilizing constituents may not be washed away. As the feeding roots are principally on the outside, the manure need not be spread at the base of large trees, but in a circle several feet therefrom. Another, but more laborious method, is to dig shallow trenches running towards the base of the tree, and fill in well-rotted or composted manure.

Root pruning, to make too-vigorous trees more productive, and top-pruning to thin out old wood, letting light and air amongst the branches, are also good subjects for the amateur to look into.

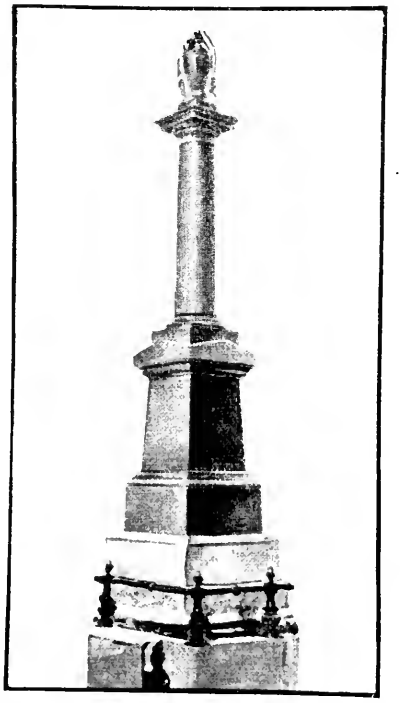
BIOGRAPHY AND LITERATURE.

A LESSON FROM THE WOODS.

——Forgot the love
Which she had learned from nature and the woods,
That beauty's chief reward is to itself,
And that the eyes of Love reflect alone
The inward fairness, which is blurred and lost,
Unless kept clear and white by duty's care.

—LOWELL.

BARON VON MUELLER.—Scientific men usually confine themselves to demonstrating the new advances in knowledge, leaving to others their application to the increase of happiness, or alleviating the wants and miseries of mankind. Dr. von Mueller was eminent in both fields. Few did more to make botany useful than he. Americans, especially, owe him a grateful debt. It should be a pleasant duty to contribute to the monument to be erected to his memory in the St. Kilda Cemetery, at Melbourne, Australia, where his body was interred. Half the money needed has been subscribed. W. Potter, Arnold Street, South Yarra, Victoria, receives contributions. The monument is to be of polished granite, 23 feet high. A biography is to be issued in which will appear the names of the contributors to the monument.



VON MUELLER MONUMENT.

PEANUT,—ARACHIS HYPOGŒA.—A controversial warfare has been waged as to the original home of this plant. Did it come from America, Africa, or Asia? De Candolle, after presenting the evidence offered by the argumentors on the several sides of the question, concludes in favor of an American origin. The strongest proofs of an American origin are botanical and archæological. The species of the genus *Arachis*, to which the cultivated species, *Arachis hypogœa*, belongs, are all American. There are six other species described by botanists, all found in Brazil and outlying regions—*Arachis glabrata*, *marginata*, *prostrata*, *pusilla*, *tuberosa* and *villosa*. That the cultivated peanut has never been found wild indicates that it has been derived, probably, by selection and cultivation, from one of the other species mentioned above. Another proof of the South American origin of the peanut, ground-nut, pindar, or goober, as it is variously called, is the discovery of large quantities of the underground pods by Dr. Uhle at Pachacamac, Peru. These pods differ considerably from those ordinarily sold in the markets of Philadelphia, and which come from Virginia. The Peruvian ones are usually longer, more slender, and with sharp recurved apices. The sutures are more prominent, and the surface is raised in elevations or protuberances by the seeds within—a feature not usually associated with the ordinary cultivated ones at the present day. The pods are about of the same size as the ones sold to-day, indicating that the cultivation of the plant had been practised extensively and had reached a high plane of development in Peru.

DR. JOHN W. HARSHBERGER.

University of Pennsylvania.

WYCH or WITCH HAZEL.—Referring to the note in MEEHANS' MONTHLY, that the Witch Hazel derives its name from the resemblance of the leaves to the Wych Elm of Great Britain, and not to anything in connection with witches, the *Bulletin of Pharmacy* says :

"This may all be true enough, but Rafinesque, in his Medical Flora published seventy years ago, calls it Witch-hazel, and states that it had become the common divining rod of the water and mineral hunter. Still earlier authors speak of it as Witch-hazel. The name had gradually been changed by a process of evolution from Wych- to Witch-hazel, and we venture to say that the latter form from general usage of a century has become the proper name of the plant and will so remain."

Naturally, druggists, whose "Witch-hazel" trade marks flood the land, cannot be expected to make a change. Witch-hazel will probably prevail. But we are dealing with facts. It is not known, as suggested in the paragraph cited, that water and mineral hunting by diviniation prevailed to any great extent in our country, or that this plant had no common name until the "hunters" gave it this.

Further, it is not known that women were engaged in these searches. As reported, only men followed this craft, and they would be wizards and not witches.

THE ROSE IN TRADITION.—At all times the rose has enjoyed particular distinction as a sacred flower. Mohammedan tradition gives it that when Saladin captured Jerusalem he refused to enter the shrines of the temple, which had been converted into a church by the Crusaders, till the walls had been thoroughly cleansed and purified with rosewater. A similar story is told of the church of St. Sophia at Constantinople, when transformed from a Christian palace of worship into a Mohammedan mosque. Something of the sanctity of the flower in the Moslem mind, says an exchange devoted to flower culture, may be traced to one of the traditions which have served to explain the origin of the flower, that it sprang from the blood of the prophet. Even to this day, when a Turk sees a rose lying on the ground he will be seen to raise it tenderly and devoutly and, kissing it, always lay it in some place of safety. The followers of Zoroaster have a tradition that prior to the introduction of evil into the world the rose did not possess any thorns. In the East, they believe that the so-called burning bush, in which the angel of the Lord appeared to Moses, was a rose tree. In the Roman Catholic Church the rose, as well as the lily, seems to retain an element of sacred character which it appears to have had in all ancient religions. —*American Druggist.*

EPIPACTIS GIGANTEA.—Upon opening MEEHANS' MONTHLY for October, one is inclined to exclaim Oh ! at the freshness and exhilerating dainty green of the, to me, rare *Epipactis gigantea*,—especially in California, where no rain is seen from April to November. I was reminded by it of Sir Walter Scott's "Lady of the Lake, who stood revealed amid the brake." I am also reminded of Mrs. Adoniram Judson's lines to her husband, saying: "Thou art the elm to me." The tendency toward a climbing habit suggested the latter. There might be much said about the dependence of vines, etc.

In looking through such a magazine, there is much even in the names of familiar flowers to call up the past which sometimes gives one the heartache as well as pleasurable emotions. But as Mrs. Browning has well said: "There are some nettles, but, there is much more green grass;" we will be grateful for all refreshing thoughts as they will best "Keep back my autumn long ! " E. E O.

San Diego, Cal.

STEPHEN LINCOLN GOODALE.—Mr. E. E. Bogue kindly calls attention to a manifest typographical error at page 159, that makes the date of death November, 1898, instead of 1897.

GENERAL NOTES.

CHRYSANTHEMUMS.—At the great show in Schenley Park, at Pittsburg, on October 30th, Superintendent Wm. Falconer had gathered together the enormous number of 10,000 plants in 300 varieties, and all models of high culture. 8,000 persons attended the opening.

RATTLESNAKE CURE.—O. says: Can any of the readers of MEEHANS' MONTHLY give the name of the author of the following ?

"One drop of the gall of a rattlesnake applied to the wound cures the bite."